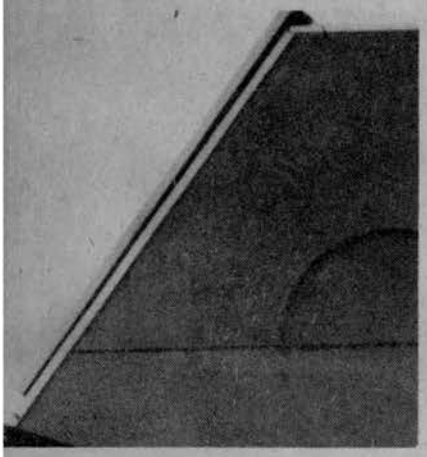
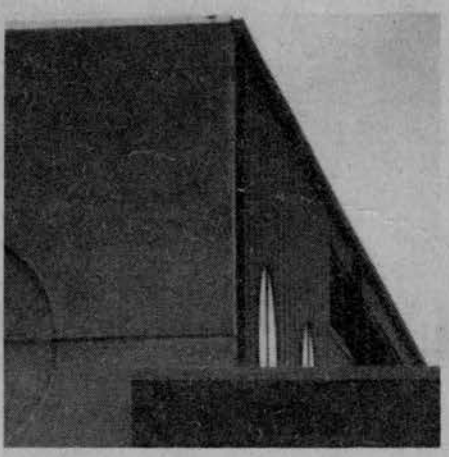
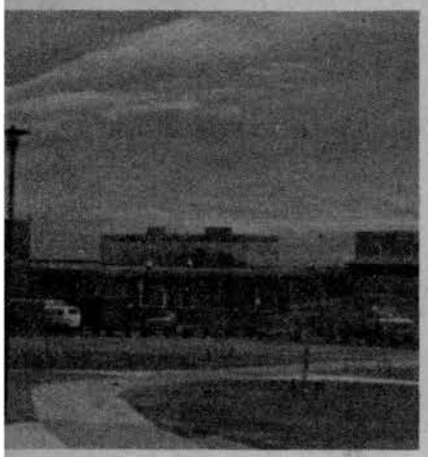
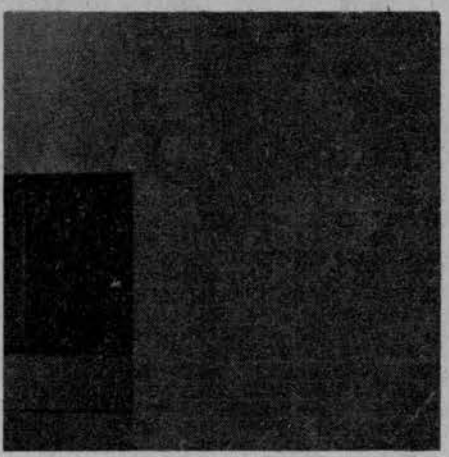
Community College of Denver

Auraria Campus
North Campus
Red Rocks Campus

1979/80 Catalog




Denver Area Council

Mrs. Rosemary Dooley
Chairperson
5/26/75 - 5/26/79
Jefferson County

Mr. Edwin E. Harshbarger, Jr.
Vice Chairperson
1/12/77 - 5/25/79
Adams County

Mr. Cipriano Griego
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5/16/75 - 5/26/79
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Mrs. Aurelia C. Anderson
9/14/67 - 5/26/81
Boulder County

Eddie L. Brandon
4/12/79-5/26/81
Arapahoe County

Robert E. Lahti
President

The Community College of Denver is dedicated to the open door philosophy of accepting post-secondary individuals who can profit from any instructional program or service offered. This publication describes the programs and services extended by our staff as we attempt to meet the needs of each individual. Should there be additional instructional activities or services which would allow us to be more responsive to our 5-county service area, we hope you will not hesitate to call them to our attention.

With commitment to the dignity and significance of each individual student, we pledge to do our best facilitating the achievement of your educational goal while at CCD.

Welcome to campus!

Robert E. Lahti
President

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COLLEGE ADDRESSES

Central Administration
1600 Downing Street
Denver, Colorado 80218
Phone: 839-3481

North Campus
3645 West 112th Avenue
Westminster, Colorado 80030
Phone: 466-8811

Aurora Education Center
9859 East 16th Avenue
Aurora, Colorado 80010
Phone: 364-4495

Auraria Campus
1111 West Colfax
Denver, Colorado 80204
Phone: 629-2400

Red Rocks Campus
12600 West 6 Avenue
Golden, Colorado 80401
Phone: 988-6160

KEY TO COURSE PREFIX LETTERS

GENERAL INFORMATION

History of the College

The 1967 Colorado General Assembly in the enactment of House Bill 1448 established a state system of community colleges under a State Board for Community Colleges and Occupational Education. The Bill also called for a five-member council for each of the state community colleges. The council then was appointed for the Community College of Denver and officially named the Denver Area Council for Community Colleges.

The first college to be created under the State Board by the passage of House Bill 1449 was the Community College of Denver. The law called for the establishment of three campuses in successive years beginning in the Fall of 1968 to serve primarily the area of Adams, Arapahoe, Boulder, Denver and Jefferson Counties.

The first campus, designated the North Campus, was established in relocatable buildings at East 62nd Avenue and Downing Street in the Fall of 1968. The permanent buildings for this campus were constructed at 112th and Lowell Boulevard and occupied in the Fall of 1977. It is a unique campus in that it is the largest known facility in the world totally solar heated. The North Campus has grown in enrollment from the original 1,861 students to 4,831 in the Fall of 1977.

The West Campus, now named Red Rocks, was established in the Fall of 1969, also on a temporary site. The initial registration for that Fall was 780 students. The first phase of a permanent new facility was built at 12600 W. 6th Avenue and occupied by students in the Spring of 1974. The second phase of the Campus was completed in time for Winter Quarter, 1976. The initial enrollment of 780 students at this campus has grown to an enrollment of 6,310 for the Fall, 1977.

A third Campus, Auraria, opened in downtown Denver in the Fall of 1970. This campus occupied several rented buildings prior to Winter Quarter, 1976. At that time the campus moved to its permanent home located on the Auraria Higher Education Center site. The Auraria Campus had an enrollment of 4,288 for Fall, 1977.

Accreditation

In April, 1975, each of the three campuses of the Community College of Denver were granted unconditional accreditation and membership status in the North Central Association of Colleges and Secondary Schools.

The Community College of Denver is under the jurisdiction of the Colorado State Board for Community Colleges and Occupational Education. The community Colleges Division of the State Board has received letters from officials of four-year colleges and universities in Colorado stating that transfer credit will be granted to students who have successfully completed appropriate courses at the several colleges operating under the State Board. Students who plan to transfer to baccalaureate programs at four-year institutions can be confident that college-parallel credits earned at the Community College of Denver will transfer without difficulty if students do acceptable work at the four-year institution.

MISSION AND ROLE

Mission Statement

The Community College of Denver is a comprehensive State community college established within the five county area of Adams, Arapahoe, Boulder, Denver and Jefferson counties to help meet the educational needs of youth, adults and the community. The college is dedicated to accepting all individuals who can benefit from the educational programs of the college.

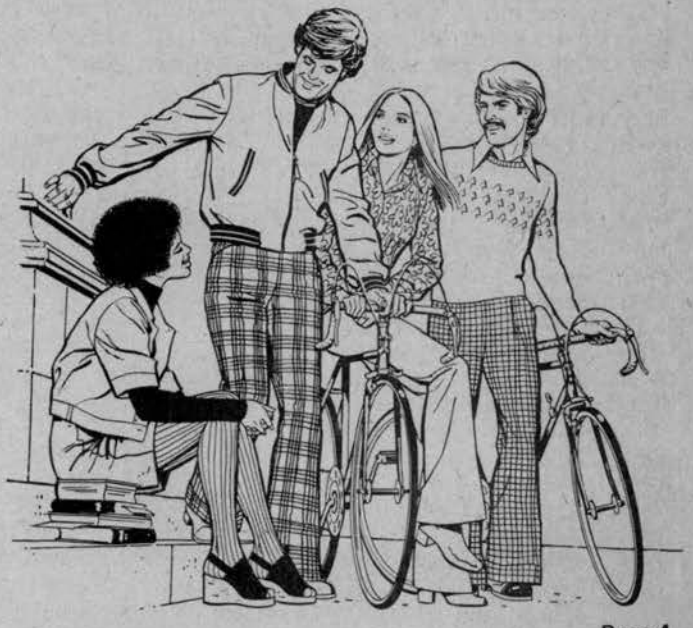
College Role

The role of the Community College of Denver is:

1. To provide educational programs to meet the occupational needs of youth and adults in technical and vocational fields.
2. To provide educational programs which will enable students to transfer to four-year colleges or universities.
3. To provide other educational opportunities for youth and adults including developmental programs, cultural opportunities and community service.
4. To provide services that will assist students in identifying, selecting and accomplishing their educational goals.

AFFIRMATIVE ACTION

The Affirmative Action Supervisior has been appointed to serve the students and staff of the three campuses and Centeral Administration in all cases of discrimination. The Affirmative Action Supervisor is located at Center Administration, 1009 Grant Street.



TUITION, FEES, EXPENSES, AND REFUNDS

TUITION

The tuition for state supported institutions is determined by the Colorado General Assembly and is subject to change, at press time 1979 Long Bill still in debate.

TUITION SUMMER TERM, FALL AND SPRING SEMESTER

Resident

1-11 credit hours — $16.20 per credit hour
12-18 credit hours — $194.50
Each hour over 18 is an additional $13.00

Non-Resident

1-11 credit hours — $73.05 per credit hour
12-18 credit hours — $876.50
Each hour over 18 is an additional $58.45

FEES

A student fee in the amount of $.75 to $2.40 per credit hour depending upon the campus up to a maximum of $28.80 is charged to all enrolled students. This money is used for various student activities and benefits including student publications, operation of student government, parking privileges, cultural activities, recreational activities, clubs and organizational activities. Expenditure of student fee monies is generally made with the approval of the Student Government Association. Students enrolled in certain courses may be required to purchase individual supplies and materials and to rent uniforms.

In addition to the activity fee at the Auraria Campus, every registered student is assessed $10.00 per semester which is for the payment for the construction of the Auraria Student Center and Child Care Center.

FINANCIAL OBLIGATIONS OF STUDENTS

The financial obligations of students to the College such as payments for tuition, fees, and books — are due and payable on the published specified date or at the times the obligations are incurred. In unusual circumstances of an emergency nature, where it may be impossible for a student to pay the total charges at the proper time, special arrangements may be considered for approval by the Business Office.

A student is not considered officially registered until his class schedule has been processed by the Business Office.

A student who is in any way financially obligated to the College through a tuition deferment, emergency student loan, National Defense Loan, etc., or who has failed to account for College property in his possession will be denied a transcript of record and registration for subsequent sessions until he has made a satisfactory settlement with the college.

RESIDENCE CLASSIFICATION FOR TUITION PURPOSES

At the time of application for admission, students are classified for tuition purposes as Colorado residents or out-of-state residents according to provisions of Colorado law.

Any student who has been classified as a non-resident and who believes he can qualify as a resident may secure from the Registrar a petition form for in-state status. A copy of the regulations governing residence classification is a part of the petition. Students should be aware of the published deadline for petitions for each academic term. It is the student's responsibility to ensure that petitions and all supportive documentation are on file in the Registrar's Office by the published deadline. The Registrar's Office cannot assume responsibility for mailed petitions which arrive after the deadline, and petitions will not be accepted after the published date.

The final decision regarding tuition status rests with the Registrar. Changes in classification, whether from out-of-state to in-state or the reverse, shall become effective at the time of the student's next registration. All questions regarding residency classification should be addressed to the Registrar.

WITHDRAWAL PROCEDURE AND TUITION REFUNDS

Students are admitted to the Community College of Denver under the assumption that they will remain until the end of the quarter or longer, unless unforeseen circumstances necessitate their withdrawal from the institution.

When a student finds it necessary to initiate a complete withdrawal from the College, he should check with the Registar's office for the proper procedure and to obtain the necessary forms.

The student may claim a seventy-five percent refund of tuition paid if a complete withdrawal is made before the eleventh day of classes of the new semester. Tuition refund request forms are available in the Office of Admissions and Records. No tuition refund of less that $1.00 will be made.

No refunds are possible after the tenth day of class, nor are refunds made if students drop a partial course load at any time.

If original tuition paid warrants, students are entitled to a 100% refund of tuition and fees paid for any class(es) cancelled by the College. This refund must be initiated by the student through the Admissions Office.

Unusual circumstances concerning refunds should be referred to the Dean of Student Services.

ADMISSION POLICY

The College will admit high school graduates, non-graduates of high school who are eighteen years of age or older, and any other person who can profit from the instruction for which he enrolls. However, admission to the College does not assure acceptance of an individual student in a particular course or program. Some students may be requested to enroll in special courses at the College for correction of scholastic or other deficiencies.

Applicants interested in particular programs in Health Occupations and Industrial Occupations should be aware that some of these programs have additional special admissions procedures and forms. The applicant is responsible for contacting the particular division at the campus of his/her preference for this information.

The College does not require a physical examination as a general condition of admission but reserves the right to require evidence of good health in individual instances when such seems appropriate. Physical disabilities and chronic illnesses should be indicated to the Admissions Office, Health Center and the Center for the Physically Disadvantaged.

Information confidential — used to plan for appropriate services only. Entrance examinations are not required as a condition for admission to the college.

Students are served more adequately when applications and transcripts of previously earned credits are submitted in advance of counseling appointments, advising, and registration for classes.

ADMISSIONS PROCEDURE:

Submit an official form for admission to the Community College of Denver, available from the Registrar's Office. Transcripts of previous high school or college credit are not required except as follows:

1. Persons planning to receive a degree or certificate from the college, who wish previous college credits to be considered, must submit official copies of those previous college transcripts to the Registrar's Office no later than the deadline for graduation applications as published in the quarterly Schedule of Courses. Veterans using V.A. benefits must submit transcripts of all previous post-secondary education and training.

2. The College reserves the right to request transcripts of students in cases where it is felt that the student can be better served through use of his transcripts.

3. International students should refer to International Student section.

These documents become the property of the College and will not be released to the student or transferred to other institutions. The student's subsequent registration is contingent upon receipt of all required documents.

THE HIGH SCHOOL STUDENT

An individual, under 18, presently attending high school, and wanting to take courses at the College should:

1. Make arrangements through a high school counselor for certification of credit.
2. Complete a standard form for admission.
3. Submit the special under age student application.

HIGH SCHOOL GRADUATES

Colorado high school seniors applying for admission should obtain the application form from the OFFICE OF ADMISSIONS AND RECORDS at CCD.

READMISSION OF FORMER STUDENTS

Former students who are returning to the College after a absence of one or more semesters, Summer term excepted, must make application for readmission. Students who have attended other colleges since last attending the Community College of Denver may be requested to submit a transcript of all college credits.

TRANSFER OF CREDIT

If a student wishes to have previous college credits applied toward CCD degree requirements, he must submit official copies of previous college transcripts to the Registar's Office no later than the deadline for graduation applications as published in the semester course schedule.

Students needing transcript evaluations for educational planning must make arrangements for evaluations before or after formal registration periods. Due to staff limitations, transcripts will not be evaluated on registration days.

The Community College of Denver will accept "D's" from other institutions, but in order for a person to graduate from Community College of Denver with a Certificate of Completion, Certificate of Achievement, or an Associate Degree, he must have an overall grade point average of 2.0 in

all credit counted toward the certificate or degree. Students are herewith advised that "D" credit may not be acceptable to four year institutions.

INTERNATIONAL STUDENTS

The Community College of Denver is authorized by the U.S. Immigration Service to admit non-immigrant alien students.

International students who wish to enroll at the Community College of Denver are required to submit the following documents:

1. An official form for admission to the Community College of Denver.

2. Two official copies of the appropriate high school, college or equivalent transcript. One copy must be an English translation. The other transcript should be in the original language.

3. Evidence of proficiency in the English language as documented by the Test of English as a Foreign Language, or ELS, level 107 (English Language Services).

   For information on the TOEFL test, write to:

   Test of English as a Foreign Language
   Educational Testing Service
   Box 899
   Princeton, New Jersey 08540 U.S.A.

4. A statement of the financial resources to provide for the student's stay in the United States.

Form 1-20A will not be issued to an International student until all the above documents are on file in the appropriate campus Office of Admissions and Records, and a decision to admit the student is made. International students should allow sufficient time to gather and submit **all** required documentation so that an admissions decision might be made by the College prior to the beginning of the term for which admission is sought.

Tuition and fee charges for international students are the same as for out-of-state registrants.

REQUEST FOR TRANSCRIPTS BY STUDENTS

A student requesting that a transcript of his record be sent to an educational institution or to a prospective employer must complete the appropriate form which may be obtained from the Admissions and Records Office. The College assesses no fee for this service; however, no transcript will be provided for a student who has not fulfilled all financial obligations to the college or who has not provided transcripts as requested by the college.

CHANGE OF ADDRESS

It is the responsibility of each student to notify the Office of Admissions and Records of any change of address.

INTRA-INSTITUTIONAL AND INTER-INSTITUTIONAL REGISTRATION

Students who wish to register concurrently on one or more campuses of the Community College of Denver, or at both the Auraria Campus and Metropolitan State College, should make inquiry at the office of the Registrar.

ACADEMIC INFORMATION

ATTENDANCE

College officials believe that regular class attendance is necessary if a student is to receive maximum benefits from his work. Students are expected to attend all sessions of the classes for which they are registered. Students who anticipate absences are requested to discuss these in advance with instructors.

CREDIT HOURS

Generally, one credit hour is earned by attending a non-laboratory class for a fifty-minute period, once a week, for a full semester. In a laboratory course, one credit hour is granted for from two to four, fifty-minute periods per week in a laboratory.

COURSE LOAD

The normal course load for a full-time student is 12-18 credit hours. Special permission must be obtained from the appropriate instructional dean or an authorized representative to register for more than eighteen credit hours.

ADDING AND DROPPING COURSES

Students wishing to adjust their schedules should be familiar with the college policy which reads: "The deadline for adds will be the 10th full day of instruction. The deadline for drops will be on the date two weeks prior to the end of the semester." Exceptions to this policy may be made only upon approval by the appropriate division director and instructional dean.

After the tenth class day, regular tuition will be charged for all credits added. Offsetting drops will not be taken into consideration in calculating any additional tuition. Students are encouraged to become aware of the last day to add classes each semester to avoid any additional tuition payment.

ADMINISTRATIVE WITHDRAWAL

It is a policy of the Community College of Denver to aid and support students in pursuit of their academic goals. In the event that a student is failing to meet his/her goals through acceptable satisfactory progress, the college **may ask** the student to withdraw for a semester (including summer session) so the student can better clarify his/her goals during this time period and remove learning barriers which impede educational advancement.

Students who carry less than a cumulative 2.0 grade point average over two consecutive semesters (including summer session) will be subject to a one-semester suspension.

Students have the right to appeal the administrative withdrawal in view of extenuating circumstances.

EVALUATION AND GRADING

The Community College of Denver is philosophically committed to a program that focuses on the student and on activities that foster his learning. Student evaluation, when properly conducted, is regarded as one of these activities. Although the College utilizes continuous and varied means of evaluating a student's progress, it has departed from tradition in adopting a system of grading. The system emphasizes accomplishment rather than penalty for failure and employs only the grade symbols listed below:

Grade Symbol	Quality of Work Denoted by Symbol	Grade Points Per Credit Hour
A	Superior	4
B	Excellent	3
C	Average	2
D	Below Average	1

If a student earns a grade of D, he may elect either to have it recorded on his permanent record or disregarded. Learning accomplishment at a level which is judged to be failing receives no credit and is not recorded on the permanent record. Also, some classes have a Passing/No Credit option for grading purposes.

Grades are issued at the end of each semester for all students, and grade slips will be mailed approximately one week after the last day of classes.

Incompletes

If an incomplete (I) grade is received, it must be made up during the following semester to earn credit. (Exception: Spring Semester incompletes may be made up the subsequent Fall Semester). When work is not completed, incompletes automatically revert to No Credit (NC).

GRADE-POINT AVERAGE

Under this system, grade points measure the achievement of the student for the number of credit hours he has completed at an accomplished level of D or above. They are determined by multiplying the grade points per credit hour by the credit hour value of the course completed.

The following example will enable the student to compute his grade-point average:

Course	Completed Credit Hours	Final Grade	Grade Points
English	3	B	3 grade points (3x3) equals 9
Mathematics	3	C	2 grade points (3x2) equals 6
Electronics	2	A	4 grade points (2x4) equals 8
Physics	5	C	2 grade points (5x2) equals 10
Physical Education	1	D	1 grade point (1x1)

Total grade points are divided by total credit hours to compute the grade-point average. For example, 34 divided by 14 equals a 2.43 grade-point average.

The cumulative grade-point average is the total number of grade points recorded divided by the total number of credit hours.

Quarter Credit Conversion to Semester Credits

A quarter credit is equivalent to 2/3 of a semester credit. Multiply quarter credits by 2/3 to convert them to semester credits. Examples:

a) 17 quarter credits x 2/3 = 34/3 = 11 1/3 semester credits

b) 19 quarter credits x 2/3 = 38/3 = 12 2/3 semester credits

c) 180 quarter credits x 2/3 = 360/3 = 120 semester credits

The permanent record will reflect only the cumulative total quarter hours converted to semester hours: 129 quarter credits x 2/3 = 258/3 = 86 semester credits.

CLASSIFICATION OF STUDENTS

For record and reporting purposes, students are classified as follows:

Full-time — a student who carries twelve or more credit hours.
Part-time — a student who carries less than twelve credit hours.

First-year (Freshman) — a student who has completed fewer than thirty semester hours.

Second-Year — (Sophomore) — a student who has completed thirty or more semester hours, but has not received an associate degree or has not qualified for upper division classification at a four-year college or university.

Unclassified — a student who has earned a degree (associate, bachelors, etc.) or who has qualified for upper division classification at a four-year college or university.

CHALLENGE ALLOWANCE OF CREDIT

Students may be permitted to demonstrate that their achievement level, based on prior experience(s), is the equivalent of that required for enrollment in the successful completion of a course offered by the College, according to the following conditions and procedures:

1. The student must be currently enrolled in the College.
2. The student must submit a petition to the appropriate division director setting forth the nature of the student's previous experience(s) and planned career objective(s) which support his petition to seek allowance of credit in lieu of enrolling in and completing a particular course.
3. Upon approval of the division director, an evaluation shall be arranged whereby the student shall have the opportunity to demonstrate that his level of achievement is the equivalent of that required by the College for successful completion of a particular course.
4. No more than one evaluation for allowance of credit for a particular course will be arranged during any semester of the regular academic schedule of the College.
5. Upon successful completion of the evaluation for allowance of credit, the student shall be awarded full credit for the particular course(s) as set forth in his approved petition.
6. Students pay tuition only if they pass and would normally owe tuition for the credit.

NON-TRADITIONAL CREDIT

Within the strict limitations of an established policy, enrolled students are permitted to apply for an allowance of credit for demonstrated knowledge or competency they have attained through previous study and experience. This procedure includes the challenging of courses which coincide with the student's major program and career objectives, allowance of credit through CLEP examination performance at the 35th percentile, allowance of credit for USAFI test scores meeting CCD requirements, and evidence of proficiency acquired through Life Experience.

USAFI

Students desiring credit for courses completed through the U.S. Armed Forces Institute should request that copies of such transcripts be forwarded to the registrar's office. An evaluation will be made and credit awarded as recommended by the Commission on Accreditation of Service Experiences of the American Council on Education.

LIFE EXPERIENCE

The Community College of Denver may allow college credit for life experience which is evaluated by the college to be equivalent to the content of its own courses in Occupational and General Studies. Life experience is defined as any program of instruction or related experiences, formal or informal, which has not been previous equated to college credit. Students who wish to petition for such credit should contact the appropriate instructional division for complete information.

COLLEGE LEVEL EXAMINATION PROGRAM

The College recognizes the CLEP examination as well as selected Subject Examinations. Up to 45 hours of college credit may be awarded through the CLEP General Examinations. Additional credit may be earned by attaining successful scores on CLEP subject matter examinations. The Registrar's Office should be consulted for details concerning College Level Examination Program (CLEP) Examinations.

Guidelines for the PEP are currently in the process of development. There are instances, particularly in the Nursing Program, where the division has requested use of the Proficiency Examination Program.

MINIMUM DEGREE AND CERTIFICATE REQUIREMENTS

To receive the ASSOCIATE DEGREE — a student must:

1. Complete a minimum of sixty semester hours, including the specific subject or course requirements in the selected program. Certain programs may require more than the minimum of sixty semester hours, and these must also be completed.
2. Earn an overall grade point average of 2.0 in all credit courses counted toward the degree.
3. Complete a minimum of eight semester credit hours in General Studies of which two semester credit hours must be in English.
4. Complete at least fifteen semester hours in residence at the Community College of Denver. (In mitigating circumstances, certain portions of this requirement may be waived by the Dean of Student Services.)
5. File the Application for Graduation form no later than the deadline for graduation applications as published in the semester schedule of courses. This form is available from the office of Admissions and Records.

To receive the CERTIFICATE OF ACHIEVEMENT — a student must:

1. Complete the specified subject matter or course requirements of an approved program as set forth in the catalog. For programs longer than one semester in duration, at least fifteen credit hours must be earned at the Community College of Denver.
2. Earn an overall grade-point average of 2.0 in all credit counted toward the certificate.
3. Complete three credit hours in speech or English in programs of longer than one semester in duration except in programs where exemption is noted.
4. File the Application for Graduation form when registering for the final semester. This form is available from the Office of Admissions and Records.

CERTIFICATE OF COMPLETION

The College offers many short courses, conferences, workshops and seminars. These will vary in length from one to two meetings of short duration to units necessitating many clock hours accumulated over a period of several weeks. Successful completion of short courses of this type will result in the granting of a Certificate of Completion.

A Certificate of Completion may also be granted upon the successful completion of a course or courses in fulfillment of an educational objective leading to a job-entry level employment as developed in conjunction with an advisor or counselor and approved by the respective division director leading to job-entry employment. In order to receive this Certificate the applicant must file the Application for Graduation form at the time of registering for the final semester. This form is available from the Office of Admission and Records.

Awarding of Posthumous Certificates and Degrees

A request for a posthumous certificate or degree may be made if the student for whom the request is made has met the following requirements:

1. Has successfully completed a minimum of 5/6 of the course credits required for the appropriate certificate or degree program.
2. Has successfully completed a minimum of 10 semester hours at the Community College of Denver.

Further information on making such a request is available in the Office of the Registrar.

TRANSFERABILITY OF CCD CREDIT TO FOUR-YEAR INSTITUTIONS

Students whose primary interest in attending the Community College of Denver is to prepare for transfer to a four-year institution should familiarize themselves with the general requirements of that institution. Because these requirements vary from institution to institution, it is important to obtain help from an advisor or counselor in planning a program of study.

In addition, each major at an institution has specific course requirements, making it extremely important for students to follow a well-planned course of study at CCD. Students who follow a prescribed transfer program (recommended by an advisor or counselor) will have the best chance of making the "smoothest" transition to the college to which the student plans to transfer.

ADVISING

The entire faculty of the College is guidance oriented and has a major commitment to help each individual student pursue a course of study planned to fulfill his/her goals.

Students are assisted by the instructional staff and especially in the case of undecided students, a counselor in developing his/her program of study and selection of classes each semester.

It is the student's responsibility to:

1. Meet with an instructor to discuss the most appropriate classes for his career objective.

2. Discuss his/her program and classes prior to each registration and work out his class schedule.

3. Contact an instructor when problems arise in the program. The instructor should also be informed if he/she changes his/her program of study.

4. Make certain he/she is fulfilling the departments requirements for graduation.

STUDENTS WHO HAVE NOT SELECTED A PROGRAM OF STUDY, OR ARE UNCERTAIN OF THE PROGRAM THEY WANT TO FOLLOW, ARE URGED TO CONTACT THE COUNSELING CENTER.

STUDENT SERVICES

In addition to the programs of study available at the College, a number of related or special services are provided for the assistance of students and others who may be interested.

COUNSELING

The members of the counseling staff are dedicated to helping the students of the Community College of Denver receive the types of counseling services they need from well-qualified and concerned counselors. Counseling is available both days and evenings for educational and career planning, and for discussion of personal and social problems.

Counseling is available from 8:00 A.M. to 9:00 P.M., Monday through Thursday, and 8:00 A.M. to 5:00 P.M. on Friday. Special attention is given to Academic-Educational problems, Career-Vocational Planning, and Personal-Social Adjustment. In addition to one-to-one services, a number of personal growth group activities are provided. All counseling is treated with the highest regard for confidentiality.

PERSONAL GROWTH GROUPS

Small group experiences are offered that provide assistance and personal growth in such areas as: self-exploration and understanding, human potential seminar, vocational exploration, assertiveness training and anxiety management. Some of the groups offer college credit.

TESTING

The College provides a voluntary testing program to assist students in clarifying interests and assessing general aptitudes. With this information, counselors are better able to assist individual students in making their educational and career choices and making optimum use of the resources available.

INFORMATION CENTER

On each campus, an Information Center has been established, in which a student is encouraged to ask for information about campus programs and resources.

CAREER CENTER

The Career Center works in conjunction with the Counseling Division. This Center has much occupational information, various college catalogs, and operates the Colorado Career Information System (COCIS) to assist students in making informed career decisions. A Vocational Guidance Specialist is available to assist students in this Center.

FAMILY EDUCATION RIGHTS AND PRIVACY ACT OF 1974

In compliance with the Family Education Rights and Privacy Act of 1974, also known as the Buckley Amendment, institutions of higher education such as the Community College of Denver are required, on an annual basis, to inform their students of their rights under the Act, and to enumerate its basic provisions. The following statement constitutes such notice.

Under the Act, students at post-secondary institutions have the right to inspect and review any and all official records, files, and data directly related to the student, including all material that is incorporated into each student's cumulative record folder.

The student shall have the right to challenge the contents of their educational records and also, an opportunity for the right to a hearing to challenge the content of his/her school records, to ensure that the records are not inaccurate, misleading, or otherwise in violation of the privacy or other rights of students, and to provide an opportunity for the correction or deletion of any such inaccurate, misleading, or otherwise inappropriate data contained therein.

Institutions may lose federal funds if institutional policy permits the release of personally identifiable records or files (or personal information contained therein) of students without written consent of the student, to any individual, agency, or organization, other than the following:

1. Other officials within the college.
2. Officials of other colleges to which student seeks admission.
3. Certain state and federal authorities.
4. Financial aid agencies.
5. Authorities entitled to access under state law (e.g. Open Records Law).
6. Organizations studying means of improving test, student aid, or instruction.
7. Accrediting organizations.
8. Parents of dependent students.
9. Officers of the court in response to order or subpoena.
10. Persons dealing with emergency that threatens health or safety.

"Personally identifiable records" includes the following: the name and address of the student, the name of the student's parent(s) or other family member, the student's social security number, a list of personal characteristics which would make the student's identity easily traceable, or other information which would make the student's identity easily traceable.

The school may release "directory information" about students without the prior approval of the student unless the student requests in writing that the institution not designate that information relating to the student: the student's name, address, telephone number, date and place of birth, major field of study, participation in officially recognized activities and sports, dates of attendance, degrees and awards received, the most recent previous educational agency or institution attended by the student, and other similar information.

Any student at the CCD not wishing any or all of the above information to be released upon request to any interested party must notify the Registrar's Office in writing within the first ten class days of any quarter or semester. Forms for such purpose are available in the Registrar's Office. Requests for non-disclosure will be honored by the institution for only one academic year. All requests for non-disclosure filed in any academic year expire on the first day of class of the next academic year (Sept. - June), and must be renewed if the student desires further non-disclosure.

The following types of information are maintained by the institution and are located in the Registrar's Office:

1. Application for admission.
2. Evaluations of transfer credit and the transferred transcript(s).
3. Applications for and evaluations pertaining to graduation.
4. Petitions for change in residency classification.
5. Records pertaining to the awarding of non-traditional credit (CLEP, USAFI, Life Experience).
6. Records of all courses attempted and completed at CCD.
7. Official CCD transcript of the student's academic record.
8. Routine correspondence between the student and the institution.
9. Other records pertaining to routine transactions between the student and the institution on a day-to-day basis, e.g. add-drop forms, requests for transcripts, grade change forms, etc.

The Registrar is the person responsible for the maintenance of records, and inquiries regarding such records should be directed to the Registrar or his designee.

Students wishing to examine their records may be required by the institution to give written notice of such intent. Such requests must be honored by the institution within a period not to exceed forty-five days from the date of the notice of intent.

When personally identifiable information is released to third parties under the provisions of this act, it is done on the condition that such party will not permit any other party to have access to such information without the written consent of the student.

This notice supersedes all previous notices on the Family Educational Rights and Privacy Act of 1974 published by or for the Community College of Denver. Revisions and clarifications will be published as experience with the law and institutional policy warrants.

STUDENT RIGHTS AND RESPONSIBILITIES

Admission to the College implies a recognition by the student that he should respect the rights of others, and that he should observe moral and civil laws. Interference with the normal processes of education in the classroom or elsewhere on the campus will be regarded as unacceptable conduct which warrants suspension and/or dismissal from the school. The success of the College in attaining its objectives is conditioned by the good will, integrity, and honor of its students.

The Denver Area Council has approved a document which contains a Definition of Education, a Joint Statement on Rights, Freedoms and Responsibilities of Students, and Rules of Procedure in Student Disciplinary Matters. This document provides guidelines necessary to insure the rights of all members of the college community. Each campus has its specific "due process" procedures. These procedures are included in the Student Handbook.

STUDENT ACTIVITIES

The College cooperates in the development of those student-initiated activities which supplement the more formal instructional program. Such activities are expected to provide constructive experiences which will stimulate personal growth and social development and add to the student's enjoyment of life. Opportunities for the development of leadership, cooperative planning and special interests are fostered through participation in these activities. All student activities are coordinated through the Office of Student Activities.

STUDENT GOVERNMENT ASSOCIATION

The purpose of the Student Government is to represent the student body through effective communication with all members of the college community. It encourages the development of campus organizations and activities which meet the needs and interests of the students. The Student Government also attempts to represent and interpret student opinion in the formation of Campus policy. Student Activities funds are used to provide a variety of extra-curricular and co-curricular educational and social opportunities for students, and to promote unity and fellowship among students of the Campus community.

STUDENT PUBLICATIONS

A school newspaper and other publications are produced under the sponsorship of the Board of Publications, with the cooperation of the Student Activities Office.

FOOD SERVICE

Automated food service is provided on all campuses in the food vending area. The Auraria Campus and North Campus provide cafeteria service as well.

HOUSING

Students who attend the Community College of Denver commute. The College does not operate a residence hall program. Students are expected to arrange their own housing. Those desiring help may contact the Business Office of Student Government Association.

STUDENT CENTER

On the Auraria Campus, the Student Center houses the Student Activities Office, Health Office, bookstore, club rooms, student council offices, activity rooms, game rooms, a Rathskellar, and lounges.

HEALTH SERVICES

College officials recognize the importance of good health for happy and productive study. The Student Health Service is designed to foster and maintain proper attitudes and habits of personal community health. Various programs and activities related to current health problems are planned each quarter. These programs are designed to educate students, faculty, and staff regarding health problems and the means of preventing them.

A registered nurse is available to assist students with minor emergencies, treatment of minor illnesses, referrals, health information and other health related problems.

Because the College carries **no** accident insurance for students, expenses resulting from instructional and/or recreational injuries are the sole responsibility of the student and his insurance company.

An accident and sickness insurance plan is available to students at reasonable cost. Applications for such insurance for students and their dependents are provided at the time of registration. Those who enroll after the regular registration periods may request an application form from the Health Center on the campus.

JOB DEVELOPMENT AND PLACEMENT

The Job Development and Placement Office on the respective campuses, the instructors, and the Occupational Studies Division Directors maintain close contact with business and industry concerning job opportunities and training needs. As a result of this team effort, various types of job opportunities are made available to students seeking full-time, part-time and temporary jobs. A special effort is made to assist students in obtaining suitable career-related employment in occupations for which they have been trained. Included in the services are resume' development, job application aids, job interview aids, summer employment, vocational counseling and a current listing of various federal, state, city and county civil service job openings. A close working relationship is also maintained with most of the community and social agencies.

Students needing employment are encouraged to contact the Placement Office on their campus for assistance and support in their job search efforts.

An employment related follow-up study is conducted on an ongoing basis to assist the college in evaluating its programs.

BOOKSTORES

AURARIA BOOK CENTER

Serving the Auraria Campus.
Telephone: 629-3230
Location: Lawrence at 10th St. in the Student Center
Hours: Please call for information

NORTH CAMPUS BOOKSTORE

Serving the North Campus.
Telephone: 466-8811
Location: 3645 W. 112th Ave. in the Student Center
Hours (during class sessions): 9:00 AM - 8:30 PM Mon. - Thur.
9:00 AM - 3:00 PM Fri.

RED ROCKS BOOKSTORE

Serving the Red Rocks Campus
Telephone: 988-6160
Location: 12600 W. 6th Ave. on the Bridge.
Hours (during class sessions): 9:00 AM - 8:30 PM Mon. - Thur.
9:00 AM - 5:00 PM Fri.

The Bookstores are the student source for all required and non-required educational materials - used and new textbooks, dictionaries and reference books, school and course related supplies.

The Bookstores are also a source for college imprinted items, art and drafting supplies, office supplies, drugs and sundries, gift items, greeting cards, candy and soft goods.

Services offered by the Bookstores include special orders, used book buy, limited check cashing, photo finishing, postage stamps, graduation announcements and class rings. Hole punches, pencil sharpeners and staplers are always available for student use.

FINANCIAL ASSISTANCE

GENERAL INFORMATION:

The Financial Aid Office administers federal and state financial assistance programs. Eligibility is based on financial need as defined by Federal, State and institutional regulations and guidelines. Financial Aid students are expected to complete a minimum of 12 credit hours per semester with a 2.0 grade or better.

APPLICATION PROCEDURES:

All students must apply and be accepted for admission to the College before disbursement of any financial aid. Applications for financial aid are required to be completed once each year to determine each student's eligibility for financial aid. The following applications are required:

1. American College Testing Program's Family Financial Statement (FFS) also includes the Basic Educational Opportunity Grant Program (BEOG).
2. Institutional Application (CSD)

Additional supporting documents may be requested by the Financial Aid Office such as tax returns, Affidavit of Non-Support, statement of Welfare benefits, Social Security benefits, etc. Application materials are available in the Financial Aid Office on each campus of the Community College of Denver. Priority will be given to students with completed applications on file by the following dates:

Academic Year 1979-80 — June 1, 1979
Spring Semester 1980 — December 1, 1979
Summer Session 1980 — April 1, 1980

Students are encouraged to submit their applications early. Applications received after the above priority dates will be given consideration based on the availability of funds.

Financial Aid will be awarded by priority date until funds are expended.

ELIGIBILITY:

Most types of assistance from the Financial Aid Office are based on financial need. Financial need is the difference between the costs of attending the College and the resources available to the student. Resources include parent's contributions, earnings from employment, spouse's income, assistance from friends, Veteran's benefits, Social Security, Vocational Rehabilitation, Welfare, etc. All resources and changes in resources must be reported by the student to the Financial Aid Office.

Financial Aid recipients must reapply for aid each academic year. Summer awards are determined separately from academic year awards. Each year financial aid is awarded based on the student's current financial need and academic progress, and the availability of funds.

Part-time students (1-11 credit hours per semester) may receive aid not to exceed tuition and fees plus $6.00 per credit hour for books and supplies, and transportation of $10.00 per month.

G.E.D. students may receive aid not to exceed tuition and fees plus $6.00 per credit hour for books and supplies and transportation of $10.00 per month.

Students holding or eligible for Associate, Bachelors, Masters, or Doctorate degrees will not be eligible for financial aid. However, in exceptional cases a person may appeal to the Office of Financial Aid for direct educational costs [tuition and fees (instate)].

SATISFACTORY AND MEASURABLE PROGRESS:

Students receiving Financial Aid must maintain satisfactory and measurable progress each semester. Full-time aid recipients must complete at least 12 credit hours per semester with a 2.0 grade point average to remain in good standing.

In general, financial aid recipients may only receive up to five semesters of financial assistance. (For more detailed information contact the Campus Financial Aid office.)

REFUND POLICY

A student who withdraws during the semester must repay a portion of financial aid received. If the student's tuition and fees were paid by financial aid and the student is eligible to receive a tuition refund, the refund will be returned to the financial aid account.

TYPES OF FINANCIAL AID:

1. **Basic Educational Opportunity Grant (BEOG)**

The BEOG program provides federal grants to assist with educational expenses. Award amounts range from $200.00 to $1800.00 depending upon the cost of education. Approximately six weeks after the student applies, he/she will receive a Student Eligibility Report (SER). All copies of the SER must be brought or mailed to the Financial Aid Office even if the student is ineligible to receive a Basic Grant award.

2. **Self-Help Programs**
   a. **College Work-Study Program**
      The College Work-Study Program provides employment opportunities for students demonstrating a financial need as defined by the College. Hourly rates start at Federal minimum wage.
   b. **Colorado Work-Study (No-Need)**
      The State of Colorado provides limited funds to employ students who do not demonstrate financial need and who are Colorado residents for tuition purposes. Hourly rates start at Federal minimum wage.

c. **National Direct Student Loan (NDSL)**
Loans are available to students based on their demonstrated financial need. Repayment begins not later than ten months after graduation or termination of student status. The interest rate is three percent per annum with minimum monthly payments of $30.00 per month. The period of repayment cannot exceed 10 years. Repayments may be postponed if education is resumed, for service in the Peace Corps, Vista or for up to three years of military service.

d. **Nursing Loans**
Loans are available to students enrolled in a course of study leading to the associate degree in nursing. Repayment begins ten months after the borrower graduates or terminates his student status. Interest accrues at the rate of three percent per annum. A portion of the loan may be cancelled for professional service in specified areas.

3. **Grants**

a. **Colorado Student Grant (CSG)**
Grants area available to Colorado residents based on financial need. Awards range up to $1000 per academic year.

4. **Colorado**

b. **Student Incentive Grant (CSIG)**
Grants are available on a need basis and must be matched dollar for dollar by the Colorado Student Incentive Grant Program. The maximum award is $1500.00 per year.

c. **Supplemental Educational Opportunity Grant (SEOG)**
Grants range from $200 to $1500 depending on financial need and the availability of funds. In order for students to be eligible, their resources cannot exceed 50% of their college budget. Grants must be matched with other financial assistance such as grants, scholarships, loans, and work-study earnings equal to the SEOG award.

d. **Nursing Scholarship Program**
Scholarships are available to students enrolled in a course of study leading to an associate degree in nursing. Awards may range up to $2,000 per year based on availability of funds and the student's demonstrated financial need.

4. **Scholarships**

a. **Colorado Scholars Program**
Scholarships available to Colorado residents who have completed a minimum of 12 credit hours at CCD with at least a 3.0 grade average in all courses attempted. Applications are available at the Financial Aid Office. Scholarships are limited to tuition and fees and dependent upon the availability of funds.

Community Services

The comprehensive community college has responsibility, in addition to providing credit curriculum and support services to the student body, to meet other needs of the community consistent with the goals and philosophy of the College. To do so, the Community Service Offices at each campus offer non-credit continuing education programs, provide coordination for off-campus credit classes, are involved in community development and institutional improvement activity. Each campus will differ in the emphasis placed on these functions according to the unique conditions and population needs in their respective service areas. Each campus encourages ideas from the public for non-credit and off-campus credit classes and the participation of the College in community problem solving efforts.

Community Service Offices

North	Red Rocks	Auraria
466-8811	988-9445	629-2442
Ext. 511, 512	988-6160	534-5564

Types of Non-Credit Programs Offered (included but not limited to): Social/interpersonal development, recreation, dance, domestic skills, business, home/financial improvement, vocational, arts and crafts, psychic, womens, leisure time use, and others.

Community Development Activity: Advisory and planning group membership, technical assistance, service projects, social agency liason, service learning, needs analysis, etc.

Other Services: Senior citizens tuition free enrollment, referral and information on other continuing educatior programs, public information, etc.

SPECIAL PROGRAMS

The College actively seeks funding from external funding sources in order to provide programs that will:

1. Enable more students to attend the college
2. Offer courses of instruction and provide services that could not ordinarily be provided from present operating funds.
3. Enrich present programs
4. Be consistent with the philosophical commitment of the college
5. Be within the scope of the financial and human resources of the college

The programs vary according to schedules for funding and agency guidelines. Currently, the following continuing sponsored programs serve College students:

DISADVANTAGED SUPPLEMENTAL SERVICES — Services and instruction are provided to disadvantaged occupational students including guidance, tutoring, testing, and cooperative work experience.

EDUCATIONAL OPPORTUNITY CENTER — The Center, in cooperation with Metropolitan State College and the University of Colorado at Denver, provides assessment and guidance services to prospective students in the five-county Denver Metropolitan area.

FIRE SERVICE TRAINING — Training courses are offered upon request to fire departments at their local stations.

HUMAN SERVICES AIDE — Human services training is coordinated with the Colorado Department of Social Services.

PREP PROGRAM (PREDISCHARGE EDUCATION PROGRAM) — G.E.D. and College refresher/remedial education is conducted at Lowry Air Force Base for eligible airmen.

VCIP (VETERANS COST OF INSTRUCTION PROGRAM) — Comprehensive services are provided to veterans on three campuses and through a community-based outreach program.

LIMITATIONS OF SCHEDULE INFORMATION

This schedule of courses should not be considered a contract between the Community College of Denver and any prospective student. The college must retain the right to cancel programs or courses, to change instructors, and to change times or locations of classes offered.

Published charges for tuition and fees are subject to changes established by the legislature.

All courses listed in the current catalog but not offered in a given semester or on a given campus may be offered if there is sufficient student interest.

Similarly, published charges for tuition and fees are subject to change as circumstances may require.

All of the courses listed but not offered in a given quarter or on a given campus may be offered if there is sufficient student interest.

Course Numbers

Course numbers consist of prefix letters, which constitute an abbreviation of the subject area or program, and a series of three digits, the first of which indicates its classification according to the year it should be taken. Usually, course numbers below 100 are designed for developmental education; numbers from 100-199 are usually taken during the first year of college since they are prerequisite courses. Courses numbered 200-299 are usually taken during the second year of college.

LEARNING MATERIALS CENTER

The Learning Materials Center (LMC), a combination of the library, audio-visual department, and independent study center, functions as an instructional area and provides support for the courses taught at the college. It is a source of information in a variety of forms, including books, periodicals and audio-visual materials. The equipment necessary to use the A-V materials is also available.

As all campuses of Community College of Denver are young and growing, the LMCs do not own everything you will need. To provide you with additional information, books, periodicals and audio-visual materials are exchanged among campuses and borrowed from other libraries as well.

Finally, you will find a staff interested and willing to assist you in discovering and utilizing the LMC resources available to you.

WOMEN'S CENTER

Attitudes surrounding women and their roles and life-styles have changed dramatically in recent years. Contemporary society includes increasing emphasis on options for women. Options available to women in the 70's include: (a) life solely in the home; (b) life divided among home, employment and community involvement; (c) life primarily outside the home. Women are faced with a greater responsibility than ever before, as well as new freedom. Women who have diversified backgrounds are seeking ways by which they can become more actively involved in all aspects of advancing society. Students already enrolled at CCD as well as people who are considering re-entry to school have been active participants in Women's Center program.

The Women's Center strives to maximize the potential of women of all races, ages, economic and ethnic backgrounds. As more and more women re-examine their positions in society, the Women's Center will offer insights into work and how it affects lives, as well as examining the prevalent roles of women in the Denver and Colorado regions. Mini-courses, workshops, rap sessions, etc. will also be held for women in transition, single parents, those exploring career or school re-entry or change, handling personal and family finances and advocacy. The Women's Center acts as a clearinghouse of information — providing services and data relevant to women and their needs. The Center also works with faculty and administrators to develop an awareness on campus and in the community as to the needs of women.

Programs from all three campuses focus on the needs of women who wish to re-enter school. Each campus has programs designed to serve the unique needs of the campus community. Call your local Women's Center for more information on re-entry programs.

AURARIA CAMPUS WOMEN'S CENTER

With the increase of women attending schools of Higher Education, the developing, implementing and promoting of programs to meet the special needs of women are highly essential. Our plans are to provide Workshops, Speakers, Films and Programs for re-entry to college.

Our plans, here at the Women's Resource Center, are to provide assistance to as many women on the CCD/Auraria Campus as possible. We have developed and implemented programs to meet the special needs of women.

We recognize the needs of women veterans, women on welfare, women on financial aid, women offenders, women on social security income who are here to further their education. We also plan to provide referrals to various community agencies.

NORTH CAMPUS WOMEN'S CENTER

Currently, the greatest demands met by the Women's Center at North Campus are for information in the areas of employment, child care, financial aid, counseling (career and personal), and educational information. The Women's Center is a central location where women can come to receive various kinds of assistance without charge. The center also provides special support groups and classes for women.

The Center is open Monday through Friday, 9-4 and Wednesday evenings by appointment. All students, staff, faculty and community people are welcome to use our service.

RED ROCKS WOMEN'S CENTER

Red Rocks Women's Center serves people in the community and on campus through a series of brown bag lunch programs which are held on campus every Thursday from 12:15 to 1:30. Past programs have featured information on employment — career changes and re-entry — including interview techniques, resume preparation, current employment trends and expanding career opportunities for women. Other series have dealt with child care, financial planning, assertiveness training, new credit regulations, legal rights, and women's health concerns. Most programs are offered without charge. Reservations are not necessary.

Other CCD-RR Women's Center projects have included workshops for women in non-traditional jobs — research on alternative work patterns, and a special re-entry to school programs, a monthly newsletter featuring campus and community activities of interests to women, classroom and community presentations on women and their role in contemporary society, information and referral, and a Directory of Services for Women in Jefferson County.

The Center is open Monday through Friday for students, faculty, staff, and members of the community. The Center is located in the West Wing of CCD-RR and the phone is 989-4686.

LEARNING DEVELOPMENT CENTER

Individual progress in the basic skills is what the LDC is all about. Do you want to improve your skills (in reading, writing, math, study habits, spelling, etc.) or to receive instruction toward a GED certificate? See the LDC staff, who provide free learning assistance to all Community College of Denver students. We want to help you enter and complete the Community College of Denver program of your choice. Centers are open day and night — let us help your academic dreams become realities.

There is no established timetable for completion of individual programs in the LDC; students enrolled at the Community College of Denver are permitted to use the LDC for as oong as they wish. Gaining proficiency in basic learning skills is not related to academic semesters, clock hours, or traditional forms of scheduling.

In order to meet individual needs, the LDC offers various types of instruction. Tutoring is available both on a one-to-one basis and in small groups. The purpose of this tutoring can be 1) to achieve proficiency in basic skills and study skills; 2) to apply these skills to course work; 3) to diagnose skill levels; 4) to assess learning styles; 5) to prepare to challenge a course for credit; or 6) to clear an incomplete grade.

The following instructional opportunities for all CCD students are available according to individual needs:

COMMUNICATIONS SKILLS CENTER (Auraria*, North, Red Rocks)
Reading, writing, speaking, listening, spelling, phonics, study skills, vocabulary development, speed reading, English as a second language, and grammar.

MATHEMATICS SKILLS CENTER (Auraria*, North, Red Rocks)
Tutoring in basic math, algebra, geometry, trigonometry, and calculus, as well as in math skills needed for other subjects (electronics, nursing, drafting, etc.)

G.E.D. SKILLS CENTER (Auraria*, North, Red Rocks)
Complete instruction and tutorial assistance for those students preparing for GED test. Any student who is enrolled for one hour at CCD can take as many hours of GED preparation per week as the LDC is open.

SOCIAL SCIENCE SKILLS CENTER (Auraria*, North, Red Rocks)
Back-up tutoring to students enrolled in Social Science classes; assistance in understanding basic principles, correlations, and vocabulary of the social sciences. Tutoring is given in sociology, psychology, philosophy, anthropology, economics, history, geography, and political science.

*At Auraria these four (4) services are offered at one center.

LANGUAGE SKILLS CENTER (Auraria, Red Rocks)
Assistance for students of Spanish and French in the achievement of performance goals as outlined by language instructors; assistance for foreign students who have a limited facility with the English language. To accomplish this dual purpose, the Lab offers tutorial services from qualified lab personnel and equipment for audio-lingual practice.

HEALTH OCCUPATIONS SKILLS CENTER (Auraria)
Back-up tutorial assistance to students who are in the Health Occupation classes.

TESTING SERVICE (Auraria)

TESTING SERVICE (Auraria, North, Red Rocks)
Diagnostic Testing — for classes or individual instruction.
Cognitive Mapping Inventory — describing how a student learns best.
Make-up Tests — for classes.

TESTING CENTER (Auraria)
The testing center, which is located in the LDC area, is open daily. The main testing areas which are covered include:
Achievement Testing — primarily for counselors' use.
Vocational interest Testing — for individual and counseling purposes.
The Testing Center is currently working in conjunction with the rest of the LDC in developing tests and instruction for the learning disabled.

LEARNING DEVELOPMENT CENTER

Free assistance in the following areas:

Reading — English (A,N,R)
Writing
Listening Skills
Phonics
Spelling
Study Skills
Vocabulary Development
Speed Reading
English as a Second Language
Grammar

Language (A,R)
Spanish Vocabulary Building
Spanish Grammar
Conversational Spanish
Individual Tutoring
Spanish — French — ESL Tapes

Health Occupations (A)
Basic Skills in Nursing Fundementals

Math (A,N,R)
Basic Math
Algebra
Geometry
Trigonometry
Calculus

Math Skills for (A,N,R)
Nursing
Drafting
Automotive
Welding
Graphics

Social Science (A,N,R)
Psychology — Philosophy
Sociology
Economics
History
Geography
Political Science
Anthropology

Testing (A,N,R)
Basic Skills (Reading, Math, English)
G.E.D. pre-test
Make-up exams
Vocational Interest Exams

G.E.D. (A,N,R)
Reading — Social Science
Natural Science
Math
Literature
English

PROGRAM DESCRIPTION

Tuition and fees will be assessed on a credit hour equivalency basis for registration, after initial testing to determine skill deficiences, for the following subjects:

LDC 071 — Basic Skills in Reading (N,R) (13-tuition hours) Personalized learning programs designed to improve ability in reading speed, comprehension, vocabulary, and study skills. (2-6 contact hours per week)

LDC 073 — Basic Skills in Writing (N,R)
(1-3 tuition hours) Individual perspective programs directed to meet student writing needs in the academic or vocational worlds. (2-6 contact hours per week)

LDC 081 — Basic Skills in Math (N,R)
(1-3 tuition hours) Individualized assistance planned to improve skills in arithmetic, algebra, and calculus. (2-6 contact hours per week)

LDC 090 — General Skills (A,N,R)
(0 tuition hours) Individualized assistance in any of the skills area for no tuition charge.

GED PREPARATION

Individual instruction and sample testing are combined to help students towards their GED Certificate. Students prepare for the GED test by studying up to three of the following at a time: (At Auraria, equivalent GED courses are offered through the division of Communication & Arts.)

LDS 091 — Ged Preparation in Social Studies (N,R)
(1-5 tuition hours) Covers knowledge and reading comprehension of history, economics, geography, political science, and behavioral science. (2-9 contact hours per week)

LDC 092 — GED Preparation in Reading Skills (N,R)
(1-5 tuition hours) Covers reading comprehension and interpretation of practical, general, and literary selections. (2-9 contact hours per week)

LDC 093 — GED Preparation in Science (N,R)
(1-5 tuition hours) Covers knowledge and reading comprehension in biology and physical sciences. (2-9 contact hours per week)

LDC 094 — GED Preparation in Writing Skills (N,R)
(1-5 tuition hours) Covers spelling, capitalization, punctuation, grammatical usage, diction and style, sentence structure, logic and organization. (2-9 contact hours per week)

LDC 095 — GED Preparation in Mathematics (N,R)
(1-5 tuition hours) Covers arithmetic, algebra, and geometry. (2-9 contact hours per week)

In addition, all three campuses offer free mini courses in the following areas: Speed Reading, Improving Spelling and Phonics, Finding Main Ideas, English Review, Memory Techniques, Test Taking, Note Taking and Outlining, Study Methods, Improving Vocabulary, College Algebra, Calculus I, GED Math, Algebra (MAT 111 & 112).

AFFIRMATIVE ACTION PROGRAM

President's Statement

The Community College of Denver has had a policy pertaining to nondiscrimination since the College opened its doors in 1968. The Affirmative Action Plan constitutes a commitment of the College to the continuing implementation of that policy.

It is not sufficient to state a policy of nondiscrimination. The College has a legal and moral obligation to take positive action to ensure the full realization of equal opportunity for all who are employed or seek employment at the Community College of Denver. Special effort is made to identify promising minority persons and women for positions in all areas and at all levels in which these groups are unrepresented relative to their availability. Selection must be based solely on the candidates' qualifications to carry out the responsibilities that the positions require. Such actions can only result in raising the quality and competence of the College faculty and staff.

All College staff members should share the responsibility for implementing and maintaining an aggressive Affirmative Action Program.

COLLEGIATE CENTER FOR THE PHYSICALLY DISADVANTAGED

In keeping with Section 504 of the Vocational Rehabilitation Act of 1973, it is both the policy and the practice of the Community College of Denver to provide equitable opportunities for physically and sensory disabled students to pursue occupational and academic training in regular classes, without discrimination. In order to accomplish this goal to the optimum benefit of the handicapped student, the utmost effort has been made to provide an appropriate physical, attitudinal, and supportive environment.

Accessible Facilities and Support Systems

All facilities of the College are of recent construction, and barrier-free design was a prime factor in the planning. Because mainstreaming has been an integral part of the philosophy of the College since its inception in 1968, handicapped students have access to one of the most comprehensive support systems available at any postsecondary institution in the nation. More than one hundred different auxiliary services are provided at no additional charge, to assist the disabled client in reaching his educational objectives.

This combination of highly functional barrier-free facilities, total faculty orientation to the mainstreaming concept, and intensive auxiliary service has understandably attracted large numbers of handicapped candidates to the Community College of Denver. To accommodate this significant component of the student body (ranging from 500 to 700 in any given year), the college has established a Center for the Physically Disadvantaged, through which approximately 30 professional and paraprofessional personnel offer service on the three campuses of the College. Headquartered at the North Campus in a building erected under joint Federal and State auspices, the Center and its affiliate offices at the Auraria and Red Rocks campuses serve from 500 to 700 disabled students in any given year.

Mainstreaming Required

It is recognized that some candidates seeking admission to or presently pursuing studies at the College cannot succeed in this particular mainstreamed environment, despite the accessible programs and facilities, the broad choice of career

options open to everyone, and the full range of supportive services available. It must be emphasized that, because mainstreaming in regular classes is both an integral part of the College philosophy as well as the intent of Section 504, admission and retention of the candidate is based on his/her capability for receiving training in regular classes.

The majority of candidates presently served are clients of a referral agency such as the State Department of Vocational Rehabilitation, or Veterans Administration. The assistance of the client, his referral source, and any other sources or information the client **volunteers** to offer toward the mutual effort of determining whether the Community College of Denver program and services will meet the individual's needs and career goals will be utilized. An excellent evaluation system, nationally developed to aid handicapped clients in the selection of appropriate training, is also made available to enrolled students on an optional basis.

Disability Groups Served

Within the above guidelines, persons with the following disabilities are typical of those who have been successfully accommodated:

Spinal cord injuries (paraplegia, quadriplegia and other wheelchair conditions)
Amputations or congenital absence of limbs (bilateral or combinations)
Cardio-vascular limitations and malfunctions
Profound deafness and hearing impairments (Served primarily at North Campus because of a national shortage of qualified interpreters)
Impairment of function of one or more extremities
Multiple Sclerosis, Parkinson's Disease, Muscular Dystrophies
Disablements affiliated with gastro-intestinal and genito-urinary illness
Trunk, spine, abdominal defects (including fusions, Spina Bifida, etc.)
Systemic diseases, including malignancies, diabetes, malaria, arthritis, etc.
Endocrine limitation such as dwarfs, giants, midgets, cretins
Epilepsy and head injuries, with residual effects
Lung and asthmatics conditions
Cerebal Palsy, including spasticity, ataxia, etc.
Multiple handicaps

Support Service Offered

Though a full description of the program and its services cannot be treated in the space limitations of this catalog, interested candidates are encouraged to secure a copy of a free booklet describing the program, entitled, THE CENTER — A WORLD OF DISCOVERY. Copies can be obtained at any of the College's three campuses, or by writing to CPD, North Campus, 3645 W. 112th Ave., Westminster, CO 80030.

A representative sampling of services is listed below:
Complete vocational evaluation
Specialized counseling (deaf, blind, spinal cord, etc.)
Tutorial assistance
Rehabilitation health maintenance and nursing service
Interpreting service for the deaf
Readers and Braille Transcribers
Equipped and staffed resource center
Job placement for disabled students
Attendants, notetakers, parking privileges
Arrangements for early registration
Curriculum adaptation and adapted scheduling
Specialized media
Liaison with rehabilitation centers
Modification of classroom setting

VETERANS AFFAIRS OFFICE

This program, funded through the Veterans Cost of Instruction Payments Program (HEW) and the Veterans Administration Veterans Representative Program, provide comprehensive services to veteran students as well as, through community outreach efforts, to veterans in the community.

This program, on the three campuses, was established to aid Vietnam era veterans use their VA and other federal, state and community benefits and aid the educational institution in meeting the Vietnam era veterans special needs.

Services available include:
—Information on veterans benefits — federal, state and community
—Assistance with VA inquiries
—Referral for emergency food, clothing, housing, legal aid, employment, etc.
—Discharge upgrade counseling

VETERANS ACADEMIC STANDARDS AND PROGRESS

The following policy becomes effective immediately for all veteran students receiving VA benefits. This policy replaces the Veterans Academic Standards and Progress Policy appearing in the 76/77 catalog.

1. **Evaluation and Grading — Veterans**
   The Community College of Denver is philosophically committed to a program that focuses on the student and on activities that foster his learning.

   Grades which appear on the student's permanent record and are used to meet graduation requirements:

Grade Symbol	Quality of Work Denoted by Symbol	Grade Points Per Credit Hour
A	Superior	4
B	Excellent	3
C	Average	2
D	Below Average	1

2. **Grade Point Average**
   Under this system, grade points measure the achievement of the student for the number of credit hours he has taken. They are determined by multiplying the grade points per credit hour by the credit hour value of the course taken. The following example will enable the student to compute his grade point average.

Course	Completed Credit Hrs.	Final Grade	Grade Points	
English	3	A	4 grade points (4x3) equals	12
Mathematics	3	B	3 grade points (3x3) equals	9
Electronics	2	A	4 grade points (2x4) equals	8
Physics	5	C	2 grade points (5x2) equals	10
Physical Education	3	D	1 grade point (3x1) equals	3
	14			42

Total grade points are divided by total credit hours to compute the grade point average. For example, 42 divided by 14 equals a 3.0 grade point average. The cumulative grade point average is the total number of grade points recorded divided by the total number of credit hours.

A current term GPA (that which appears on the transcript) of 2.0 must be maintained. Any veteran whose current term GPA is less than 2.0 will be placed on probation for the following term, during which time he should achieve at least a 2.0 GPA. Should he fail to achieve a 2.0 GPA for that

probationary term, the veteran's certification section will terminate his certification effective the last day of class of the probationary term, and counseling and approval must be received from the Veterans Administration in order for his certification to be reinstated for any subsequent term.

In addition to the above grades, the Community College of Denver also uses the following symbols for specially noted situations.

3. **Non-Punitive Grades** (which are not recorded on a student's permanent record)

   A. **NC (No Credit Earned)**
   This symbol reflects a learning accomplishment which is at a level judged to be failing. As a non-punitive grade symbol, it cannot be used in determining progress toward fulfillment of requirements toward graduation, and according to V.A. regulations veterans affected by these symbols must have their benefits adjusted back to the beginning day of the term in effect.

   B. **WX (Veteran withdrawal after the Add-Drop period)**
   When a veteran student officially withdraws (totally or partially), after a period of 30 days following the first day of classes, a grade of "WX" will be recorded on the student's institutional (internal) record. The WX will be considered a non-punitive grade and (except for mitigating circumstances) benefits for that course will be terminated back (P.L. 94-502) to the first day of class. If a veteran student stops attending class but does not officially withdraw, he is considered as "non-attending" and may be dropped administratively. Such an administrative drop is to be initiated by the instructor with appropriate administrative support.

   C. **DX (A grade of "D" which is not recorded on the student's permanent record)**
   According to CCD policy, a D grade will not be recorded on a student's permanent record except by the student's written request that such course and grade be recorded. In accordance with P.L. 94-502, veterans receiving a non-recordable D (DX) will have their benefits for such course terminated back to the first day of classes.

4. **Other Special Grades**

   A. **AU Grade**
   A grade symbol of "AU" (audit) indicates that the student audited the course. No credit is allowed for audited courses.

   B. **I Grade**
   A grade symbol of "I" (Incomplete) is a temporary grade indicating that a student did not complete all assignments by the end of the term.

   Assignments to be completed must be mutually agreed upon by the student and the instructor with written documentation attesting same. Assignments to be completed should be on file with the division director with appropriate signatures (student, instructor and division director) for future reference in the event of personnel changes or other circumstances.

   An Incomplete grade (I) must be made up before the end of the following term or it will be recorded as an "NC" and Veterans benefits will be adjusted according to paragraph 3.A (above) of this policy.

5. **Attendance (Certificate Programs Only)**
   Veterans attendance records showing each absence from regularly scheduled classes are required, and the College will be required to document such attendance records.

6. **Mitigating Circumstances** (as defined by P.L. 94-502)
   Circumstances which directly hinder eligible veteran's or other person's pursuit of a course and which are judged to be out of the student's control. Following are some general categories of mitigating circumstances (this list is not all-inclusive):

   A. Serious illness of the eligible veteran or person.

   B. Serious illness or death in the eligible veteran's or other person's immediate family.

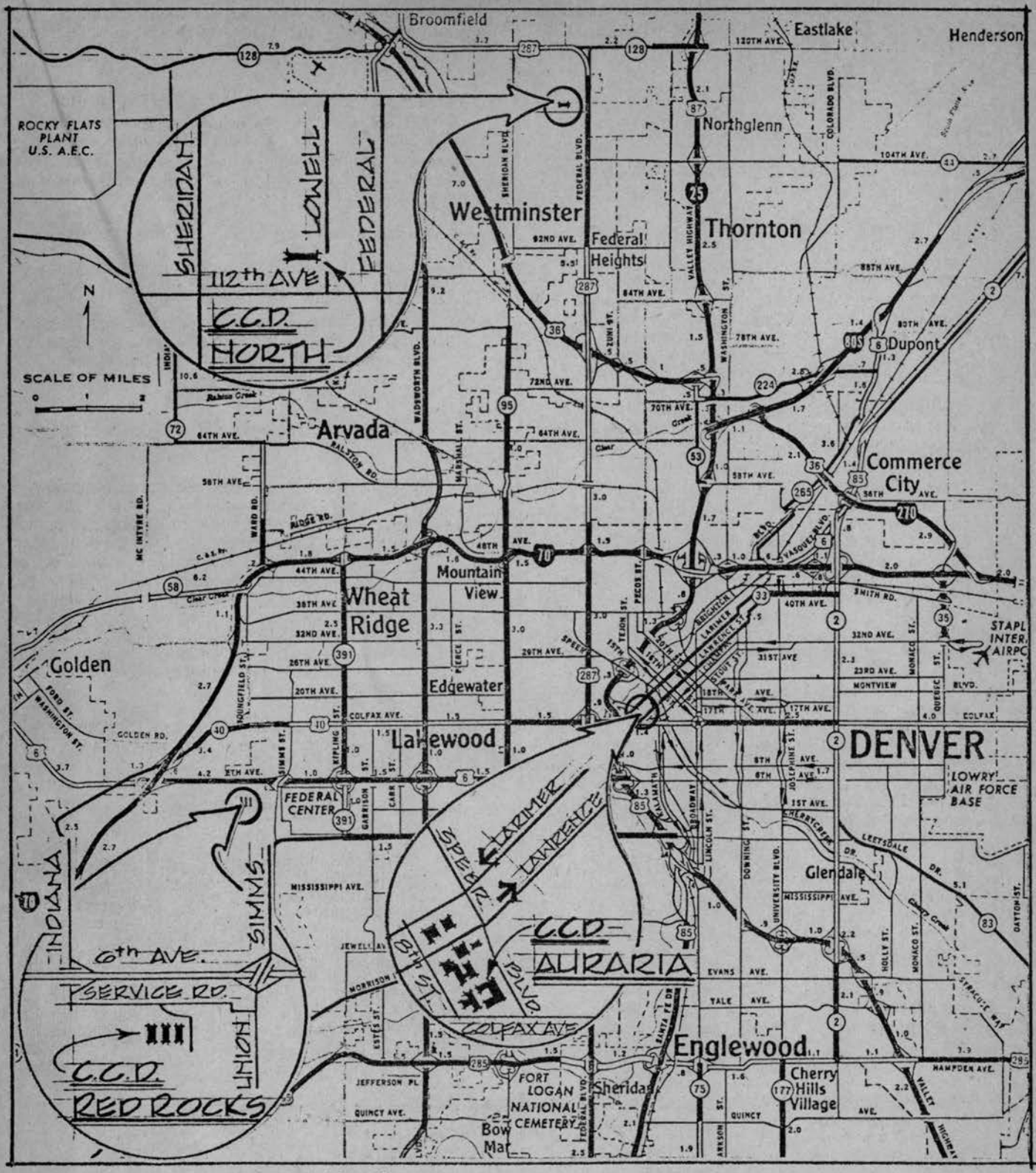
   C. Immediate family or financial obligations which require a change in terms, hours, or place of employment which precludes pursuit of course.

   D. Discontinuance of a course by a school.

   E. Active duty military service, including active duty for training.

   F. Withdrawal from a course or receipt of a nonpunitive grade upon completion of a course due to unsatisfactory work may be considered to be under mitigating circumstances if the student can demonstrate good faith pursuit of the course up to the point of withdrawal or completion **and** the student submits evidence that he or she applied for tutorial aid, consulted a Veterans Administration counselor, or consulted a school academic counselor or advisor regarding an attempt to remedy the unsatisfactory work before withdrawal or completion.

When mitigating circumstances prevail, the College will attempt to intervene in behalf of the veteran with the Veterans Administration.



Central Administration
1600 Downing Street
Denver, Colorado 80218
Phone: 839-3481

Aurora Education Center
9859 East 16th Avenue
Aurora, Colorado 80010
Phone: 364-4495

Auraria Campus
1111 West Colfax
Denver, Colorado 80204
Phone: 629-2400

North Campus
3645 West 112th Avenue
Westminster, Colorado 80030
Phone: 466-8811

Red Rocks Campus
12600 West 6 Avenue
Golden, Colorado 80401
Phone: 988-6160

COMMUNITY COLLEGE OF DENVER STUDENT CALENDAR

Auraria Campus and Aurora Education Center

1979

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Fall Semester — 1979

August 29,30	Registration
September 4	Classes Begin
November 22, 23	Thanksgiving Vac
December 19	Classes End

SPRING SEMESTER — 1980

January 15, 16	Registration
January 21	Classes Begin
March 17-21	Spring Break
May 9	Classes End

Red Rocks Campus and North Campus

1979

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FALL SEMESTER — 1979

August 29, 30	Registration
September 4	Classes Begin
November 22, 23	Thanksgiving Vac
December 20	Classes End

SPRING SEMESTER — 1980

January 7, 8	Registration
January 10	Classes Begin
March 10-14	Spring Break
May 2	Classes End

Symbols: ☐ Campus Registration, no classes X Auraria Center Registration 0 Holiday, no classes [First day of classes] Last day of classes

Shaded areas indicate breaks

General Studies

COMMUNICATION AND ARTS

Program	Campus
Art	A, N, R
Communications	A, N, R
English	A, N, R
Drama	A,N,R
French	A, R
German	R
Humanities	A, N, R
Journalism	A, N, R
Literature	A, N, R
Music	A, N, R
Physical Education	A, N, R
Reading	A, N, R
Skill Center Instructional Program	A, N, R
Spanish	A, N, R
Speech	A, N, R
Independent Study	A, N, R

SCIENCE AND MATHEMATICS

Biology	A, N, R
Chemistry	A, N, R
Computer Science	A, N, R
Earth Science	R
Mathematics	A, N, R
Physics	A, N, R
Science	A, N, R
Independent Study	A, N, R

SOCIAL SCIENCES

Anthropology	A, N, R
Economics	A, N, R
Geography	A, N, R
History	A, N, R
Philosophy	A, N, R
Political Science	A, N, R
Psychology	A, N, R
Sociology	A, N, R
Social Science	A, N, R
Independent Study	A, N, R

CONSORTIUM OF ETHNIC STUDIES

Anthropology	A
Art	A
Drama	A
Economics	A
English	A
History	A,N,R
Humanities	A
Literature	A,R
Music	A
Philosophy	A
Political Science	A,N
Psychology	A,N
Sociology	A,N

Note: Auraria Campus — A
North Campus — N
Red Rocks Campus — R

GENERAL STUDIES PROGRAM

The General Studies Programs are intended to provide educational opportunities in preparation for transfer to a four-year college or university, in general and developmental education interests, and in support of a student's selected career emphasis in Occupational Studies.

Students who intend to transfer to a four-year college or university should review the catalog of the particular institution to which they plan to transfer in order to determine specific course requirements. Copies of catalogs for other Colorado colleges, universities, and out-of-state schools may be obtained through the Office of Student Services. Students are urged to seek the advice of the division directors and faculty members in the selection of transfer courses in their areas of interest.

Students enrolled in Occupational Studies Programs may enroll in General Studies courses to meet the specific requirements of a particular occupational curriculum and to select desired elective courses.

DEGREE REQUIREMENTS

The Associate Degree is awarded by the Community College of Denver upon the successful completion of the requirements for the degree. The general requirements for the Associate Degree are listed on Page 9. A General Studies student must also meet the specific requirements in one of the three areas of emphasis listed below:

ARTS

This is designed for the student whose major emphasis of study is in Communication and Arts and/or Social Sciences and is intended for transfer to a four-year college or university in his/her area of interest.

Degree Requirements:
Successful completion of a minimum of sixty (60) semester hours of credit in transfer course work including the following:

ENG 111 and 112 ..... 6 hours
Six (6) semester hours of course work in the Division of Communication and Arts* (in addition to ENG 111 and 112)..... 6 hours
Eight (8) semester hours of course work in the Division of Science and Mathematics..... 8 hours
Eight (8) semester hours of course work in the Division of Social Sciences ..... 8 hours
Electives that fit in with the student's transfer program ..... 32 hours
TOTAL..... 60 hours

*Excluding course work in physical education

Science

This is designed for the student whose major emphasis of study is in Science or Mathematics and is intended for transfer to a four-year college or university in his area of interest.

Degree Requirements:

Successful completion of a minimum of sixty (60) semester hours of credit in transfer course work including the following:
ENG 111 and 112 ..... 6 hours
Six (6) semester hours of course work in the Division of Communication and Arts* (in addition to ENG 111 and 112)..... 6 hours
Twenty (20) semester hours of course work in the Division of Science and Mathematics..... 20 hours
Eight (8) semester hours of course work in the Division of Social Sciences ..... 8 hours
Electives that fit in with the student's transfer program ..... 20 hours
TOTAL..... 60 hours

*Excluding course work in physical education

General Education

This is designed for the student who completes a broad program of courses without the constraints of specialization characteristic of the other programs in General Studies and is not designed for transfer.

Degree Requirements:

Successful completion of a minimum of sixty (60) semester hours of course work including the following:
Four (4) semester hours of course work in the Division of Communication and Arts* of which two (2) semester hours must be English ..... 4 hours
Four (4) semester hours of course work in the Division of Science and Mathematics..... 4 hours
Four (4) semester hours of course work in the Division of Social Sciences ..... 4 hours
Electives in General Studies..... 20 hours
Electives of the student's choosing ..... 28 hours
TOTAL..... 60 hours

*Excluding course work in physical education

NOTE: Students who can submit evidence that their successful completion of sixty (60) semester hours of course work constitutes a completely transferable curriculum for transfer into a specific program at a four-year college or university need not complete the specific requirements listed above in order to be considered for the Associate Degree.

Notes

DIVISION OF COMMUNICATION AND ARTS

COURSE DESCRIPTIONS

Where a course description does not indicate the campus by the key A, N, or R, we would suggest you call the campus of your choice for information.

ART

ART 101 Basic Design (A,N,R) . . . . . 3 credit hours
Foundations of design theory.

ART 102 Basic Design (A,N,R) . . . . . 3 credit hours
Continuation of ART 101.

ART 111 Basic Drawing (A,N,R) . . . . . 3 credit hours
Freehand drawing and various media techniques.

ART 112 Basic Drawing (A,N,R) . . . . . 3 credit hours
Continuation of ART 111.

ART 131 Basic Water Color and Water Media (A,N,R) . . . . . 3 credit hours
Transparent and opaque water color painting.

ART 132 Basic Water Color and Water Media (A,N,R) . . . . . 3 credit hours
Continuation of ART 131.

ART 141 Oil and Acrylic Painting (A,N,R) . . . . . 3 credit hours
Investigation of the materials of the painter in controlling form and space.

ART 142 Oil and Acrylic Painting (A,N,R) . . . . . 3 credit hours
Continuation of ART 141.

ART 161 Pottery (N,R) . . . . . 3 credit hours
Design and construction of pottery using various handbuilding methods.

ART 162 Pottery (N,R) . . . . . 3 credit hours
Introduction to throwing techniques using potter's wheel.

ART 163 Pottery (N,R) . . . . . 3 credit hours
Design and throwing of basic forms with exploration in glazing techniques.

ART 171 Textile Design and Weaving (N,R) . . . . . 3 credit hours
Looms, weaving and textile design techniques, studio experience in weaving, batik, and other textile design.

ART 172 Textile Design and Weaving (N,R) . . . . . 3 credit hours
Continuation of ART 171.

ART 181 Basic Metal Techniques in Jewelry Design (N,R) . . . . . 3 credit hours
Construction of jewelry designs in precious metals and small casting techniques.

ART 182 Basic Casting for Jewelry Design (N,R) . . . . . 3 credit hours
Continuation of ART 181. Centrifugal and vacuum casting of precious metals using lost-wax techniques, wax working techniques, mold making and wax injection.

ART 190 Art Appreciation (N,R) . . . . . 3 credit hours
A study of the world's art masterpieces.

ART 191 Introduction to Art: A Survey of the Masterpieces of the World (N,R) . . . . . 3 credit hours
Art appreciation and history of the masterpieces of the world from pre-history through the Renaissance.

ART 192 Introduction to Art: A Survey of the Masterpieces of the World (N,R) . . . . . 3 credit hours
A continuation of ART 191, from baroque through modern art.

ART 195 The Art of Africa and Black Americans (A) . . . . . 3 credit hours
A critical examination of the art of Africa and its relationship to the artistic development of the New World.

ART 196 Chicano Art History (A) . . . . . 3 credit hours
A basic course in art appreciation designed to provide historical background in Chicano art.

ART 197 Native American Arts and Contemporary Development (A) . . . . . 3 credit hours
History of Native American art with emphasis on painting, sculpture, and crafts.

ART 201 Second Year Basic Design (A,N,R) . . . . . 3 credit hours
Applied techniques of layout and design.

ART 202 Second Year Basic Design (A,N,R) . . . . . 3 credit hours
Continuation of ART 201.

ART 211 Second Year Drawing (A,N,R) . . . . . 3 credit hours
Experimentation using a variety of media.

ART 212 Second Year Drawing (A,N,R) . . . . . 3 credit hours
Continuation of ART 211. Advanced concepts seeking more individualized solutions.

ART 221 Figure Drawing (A,N,R) . . . . . 3 credit hours
Beginning drawing of the human figure.

ART 222 Figure Drawing (A,N,R) . . . . . 3 credit hours
Continuation of ART 221.

ART 231 Second Year Water Color (A,N,R) . . . . . 3 credit hours
Emphasis on solutions in water media on a more individualized basis.

ART 232 Second Year Water Color (A,N,R) . . . . . 3 credit hours
Continuation of ART 231.

ART 241 Second Year Oil and Acrylic Painting (A,N,R) . . . . . 3 credit hours
Pre-requisite: ART 142 or permission of instructor.
Mixed media through problems involving landscape, still life, abstraction and non-objective painting.

ART 242 Second Year Oil and Acrylic Painting (A,N,R) . . . . . 3 credit hours
Continuation of ART 241.

ART 251 Basic Sculpture (N,R) . . . . . 3 credit hours
A creative approach to three dimenstional design in sculpture, modeling, assembling, and construction in a variety of materials.

ART 252 Basic Sculpture (N,R) . . . . . 3 credit hours
Continuation of ART 251.

ART 261 Second Year Pottery (N,R) . . . . . 3 credit hours
Intermediate wheelwork with advanced throwing problems. Continued involvement in glazing and firing techniques.

ART 262 Second Year Pottery (N,R) . . . . . 3 credit hours
Continuation of ART 261. More advanced throwing problems in one of three areas: (1) tableware, (2) other functional forms, (3) art forms.

ART 263 Ceramics Design (N,R). . . . . 3 credit hours
Advanced study in throwing.

ART 266 Primitive Pottery (N,R) . . . . . 3 credit hours
Hand building and firing of primitive pottery.

ART 267 Hand Building Techniques (N,R) . . . . . 3 credit hours
Advanced study in hand building. Building and firing large forms, including mold-making techniques.

ART 268 Raku Pottery (N,R). . . . . 3 credit hours
Raku as an art form with various hand building and throwing techniques.

ART 269 Firing Techniques (N,R). . . . . 3 credit hours
The study of glaze materials and various firing techniques. Loading and firing of kilns, formulating glazes and construction of various types of kilns.

ART 271 Printmaking (A,N,R). . . . . 3 credit hours
A study of basic hand printing techniques.

ART 272 Printmaking (N,R) . . . . . 3 credit hours
Continuation of ART 271.

ART 281 Second Year Metalsmithing (N,R). . . . . 3 credit hours
Creating hollow forms by raising, sinking, stretching, and polishing metals. Also includes pattern making for large hollow constructed forms.

ART 282 Second Year Metalsmithing (N,R). . . . . 3 credit hours
Continuation of ART 281. Emphasis on advanced design and experimentation of advanced techniques.

ART 291 History of American ART I (N,R). . . . . 3 credit hours
Major artists and movements in America to 1865.

ART 292 History of American Art II (N,R) . . . . . 3 credit hours
Continuation of ART 291. American artists and movements from 1865 to the present.

ART 295 Chicano Mural Painting (A) . . . . . 3 credit hours
Pre-requisite: ART 101 and ART 102 or permission of instructor.
Study in a variety of approaches to mural painting including fresco, secco, and relief. Emphasis on contemporary Chicano subjects.

ART 296 Women in Art (A,N,R). . . . . 3 credit hours
Historical study of women's art from the Renaissance to the early twentieth century providing information not generally available in art history classes. Through comparisons with art of men in similar eras, women's art will be reevaluated.

ART 297 Contemporary Issues of Women in ART (A,N,R). . . . . 3 credit hours
The art of women from early twentieth century through contemporary time with emphasis on the concerns of contemporary women artists.

ART 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

COMMUNICATIONS

COM 100 Communications and Stress Management for Health Occupations (A,N). . . . . 3 credit hours
Communication theory and practice, oral and written, with emphasis on stress situations in health occupations.

COM 105 Self-Hypnosis (R) . . . . . 3 credit hours
Concepts and techniques of self-control and self-communication.

COM 107 Occupational Communication (A,R) . . . . . 1 to 3 credit hours
Oral communication: speaking and listening in chosen fields. (can be taken as SPE 107).

COM 110 Creativity in Communication (A,N,R). . . . . 3 credit hours
Creativity through increased perception and awareness, variously expressed.

COM 120 Communication Between the Sexes (A,N,R). . . . . 3 credit hours
Interpersonal communication: non-verbal communication, listening, sexual identity, conflict resolution.

COM 141 American Sign Language I (A,N) . . . 3 credit hours
A beginning course in the use of basic signs and finger spelling used by the deaf.

COM 142 American Sign Language II (A,N). . . 3 credit hours
An extension in the development of signs and emphasis of idiomatic expression. Increased practice in the reading of signs.

COM 160 Words Don't Mean, People Do (A,R) . . . . . 3 credit hours
Basic theory and practice of human communication and how language affects thought and behavior.

COM 200 Survey of Communication (A,R). . . . 3 credit hours
Improved communication habits: models, empathy, and general semantics.

COM 205 Introduction to Discussion and Group Leadership (A,R). . . . . 3 credit hours
Methodology of working effectively in committees and discussion groups.

COM 210 The Movies (A,R) . . . . . 3 credit hours
An introduction to the movies as a 20th century form of communication.

COM 215 The Movies as Genre (A,R) . . . . . 3 credit hours
A study of genre in film.

COM 220 Introduction to Radio and TV (A,N,R). . . . . 3 credit hours

Radio and TV history, skills and occupations; includes writing and producing shows.

COM 225 The Television Image (A,N,R) . . . . . 3 credit hours
Television's influence on society and society's reaction to that influence.

COM 230 Image and Meaning (A,R). . . . . 3 credit hours
A study of the relationships between the visual and the literary arts.

COM 240 Organizational Communication (A,R). . . . . 3 credit hours
Concepts and techniques for effective communication in organizations.

COM 245 Interpersonal Communication (A,R) . . . . . 3 credit hours
Basic theory and practice of interpersonal communication skills: self-concept, empathizing, listening, values clarification, decision-making, problem solving and conflict resolution.

COM 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

DRAMA

DRA 100 Theatre in Action (N,R) . . . . . 3 credit hours
Practical insights into theatre by visiting various local theatres and theatre groups.

DRA 101 Introduction to Theatre Arts (A,N) . . . . . 3 credit hours
Basic principles of acting, scenery and costume construction.

DRA 102 Introduction to Theatre Arts (A,N) . . . . . 3 credit hours
Continuation of DRA 101.

DRA 120 Reader's Theatre (A,N,R) . . . . . 3 credit hours
Learning to select, cut, cast, produce and direct small scale productions.

DRA 131 Practicum in Teatro I (A) . . . . . 3 credit hours
Building upon the precedent of current Chicano teatro, students will establish their own techniques of acting, directing, and playwriting.

DRA 132 Practicum in Teatro II (A). . . . . 3 credit hours
Continuation of DRA 131

DRA 201 Survey of the Theatre (N,R). . . . . 3 credit hours
Survey of great plays, writers, performers and critics, through play reading, acting and production.

DRA 202 Survey of the Theat. e (N,R). . . . . 3 credit hours
Continuation of DRA 201.

DRA 210 Theatre Improvisation (R) . . . . . 3 credit hours
History of improvisation in theatre with the techniques and approaches through actual production.

DRA 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

ENGLISH

ENG 001 English as a Second Language (A,N,R). . . . . 2 to 5 credit hours
An introduction to the vocabulary, syntax, and sound system of English.

ENG 002 English as a Second Language (A,N,R). . . . . 2 to 5 credit hours
An introduction to the vocabulary and patterns of written and oral English.

ENG 003 English as a Second Language (A,N,R) . . . . . 2 to 5 credit hours
A survey of English speech and composition patterns.

ENG 020 Sound and Spelling (A) . . . . . 1 to 3 credit hours
An individualized developmental program in phonics and spelling.

ENG 021 Introduction to Language Fundamentals I (A) . . . . . 3 credit hours
A developmental program in grammar and sentence structure.

ENG 022 Introduction to Language Fundamentals II (A). . . . . 3 credit hours
A developmental program in sentence style and paragraph structure.

ENG 101 Occupational Communications (A,N,R) . . . . . 1 to 3 credit hours
Basic communication skills: job entry and on-the-job reading and writing.

ENG 102 Occupational Communication (A,N,R) . . . . . 1 to 3 credit hours
Basic communication skills with emphasis on pre-job and on-the-job speaking and listening.

ENG 103 Occupational Communication (A,N,R) . . . . . 1 to 3 credit hours
Pre-requisite: ENG 101 or permission of instructor.
Introductory technical writing: letters, progress reports and informal technical reports.

ENG 105 Study Skills (A,N,R). . . . . 1 to 3 credit hours
An introduction to basic study skills.

ENG 106 Communication for Health Occupations (A,N,R). . . . . 3 credit hours
Technical writing in the health field: documentation and organization techniques, communication processes, structure of written reports and job-seeking communications.

ENG 107 Workshop in Language Fundamentals I (A,N,R) . . . . . 3 credit hours
An introduction to grammar and sentence structure.

ENG 108 Workshop in Language Fundamentals I (A,N,R) . . . . . 3 credit hours
An introduction to sentence style and paragraph structure.

ENG 109 Barriology Communication (A) . . . . 3 credit hours
Networks and modes of communication in the Chicano community, including communication between the people and different public agencies. Basic communication theory will be examined and applied to communications channels in the barrio.

ENG 110 Composition, Style and Technique (A,R) . . . . . 3 credit hours
The basic paragraph and essay with focus on developing skills in varied sentence structure, diction, logic, clarity, conciseness and punctuation. Diagnostic tests and unit samples are used for placement.

ENG 111 English Composition (A,N,R) . . . . . 3 credit hours
Expository writing: grammatical and rhetorical principles of organization and style.

ENG 112 English Composition (A,N,R) . . . . . 3 credit hours
Pre-requisite: ENG 111 or permission of instructor.
Researching and writing the library Paper.

ENG 115 Creative Writing (A,N,R) . . . . . 3 credit hours
Techniques applicable to creative forms: poetry, essays, short stories.

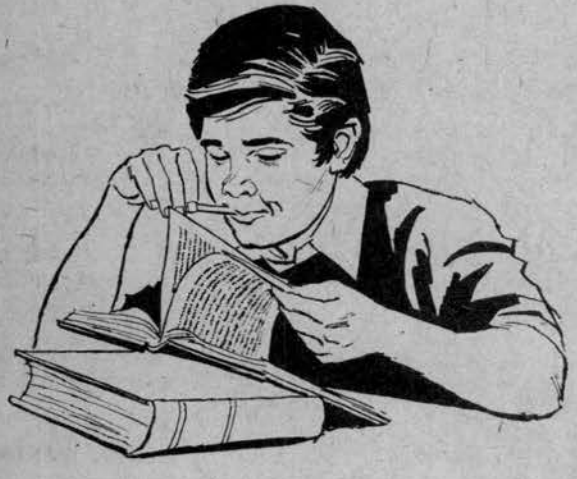
ENG 125 Poetry Writing (A,N,R) . . . . . 3 credit hours
The fundamentals of creating the language of poetry.

ENG 131 Business Communication (A,N,R) . . 3 credit hours
Intensive practice in the mechanics of language and vocabulary used by management and office personnel in preparing business letters and other business communications.

ENG 215 Advanced Creative Writing (A,N,R) . . . . . 3 credit hours
Advanced creative expression of self-enrichment toward resultant publishable material.

ENG 216 Advanced Composition (A,N,R) . . . . 3 credit hours
Pre-requisite: ENG 112 or permission of instructor.
Expository writing with emphasis on syntactic and rhetorical development.

ENG 225 Poetry Writing (A,N,R) . . . . . 3 credit hours
Prerequisite: ENG 125 or permission of instructor.
Continuation of ENG 125.



ENG 231 Technical Writing (A,N,R) . . . . . 3 credit hours
Pre-requisite: Successful completion of two semesters of Occupational Communication, or Business Communication or English Composition or equivalent.
Formal technical reports for the printer, through definition and analysis, problem defining, organization of data, structure, style and mechanics, and graphics.

ENG 232 Technical Writing (A,N,R) . . . . . 3 credit hours
A continuation of ENG 231.

ENG 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

FRENCH

FRE 101 Basic Applied French (A,N,R) . . . . . 3 credit hours
Basic conversational French for enjoyment and/or practical use.

FRE 102 Basic Applied French (A,N,R) . . . . . 3 credit hours
Continuation of FRE 101.

FRE 111 First Year French (N,R) . . . . . 5 credit hours
Basic principles of grammar, reading and writing skills, correct pronunciation and basic conversation.

FRE 112 First Year French (N,R) . . . . . 5 credit hours
Pre-requisite: FRE 111 or permission of instructor.
Continuation and expansion of FRE 111.

FRE 211 Intermediate French (N,R) . . . . . 3 credit hours
Pre-requistie: FRE 112 or equivalent.
Further skills in communications, linguistic structure, and vocabulary through readings in literature.

FRE 212 Intermediate French (N,R) . . . . . 3 credit hours
Pre-requisite: FRE 211.
Continuation and expansion of FRE 211.

FRE 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

GERMAN

GER 101 Basic Applied German (R) . . . . . 3 credit hours
Basic conversational patterns for enjoyment and/or for practical use.

GER 102 Basic Applied German (R) . . . . . 3 credit hours
Continuation of GER 101.

GER 111 First Year German (R) . . . . . 5 credit hours
Basic principles of grammar, reading and writing skills, correct pronunciation, and basic conversation.

GER 112 First Year German (R) . . . . . 5 credit hours
Pre-requisite: GER 111 or permission of instructor.
Continuation and expansion of GER 111.

GER 211 Intermediate German (R) . . . . . 3 credit hours
Pre-requisite: GER 112 or equivalent.
Further skills in communications, linguistic structure and vocabulary through readings in literature.

GER 212 Intermediate German (R) . . . . . 3 credit hours
Pre-requisite: GER 211.
Continuation and expansion of GER 211.

GER 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

HUMANITIES

HUM 100 The Female Experience (A,N,R). . . . 3 credit hours
Increased student consciousness concerning needs of women and discrimination because of sex.

HUM 111 Studies in the Humanities (A,N,R) . . . . . 3 credit hours
A comparative study of the arts and philosophies in world civilization.

HUM 112 Studies in the Humanities (A,N,R) . . . . . 3 credit hours
Continuation of HUM 111.

HUM 115 Introduction to Chicano Studies (A) . . . . . 3 credit hours
An overview of the origin, culture, philosophy, and present status of the Chicano.

HUM 120 The Native American Perspective: Arts and Ideas (A) . . . . . 3 credit hours
A study of the art and music of various Native American peoples and of the religion and philosophy from which the Native American arts forms evolved.

HUM 126 Folklore of Mexico and the Southwest (A,R) . . . . . 3 credit hours
Indian and Mestizo folklore of Mexico and the Southwest.

HUM 127 Indigenismo and the Chicano (A). . . . . 3 credit hours
A refreshing change of pace for the student interested in a non-European approach to the often forgotten philosophies and ideas of native peoples in the Americas which have affected the Chicano.

HUM 200 Pop Culture (A,R). . . . . 3 credit hours
A survey of mass-produced artifacts and their meanings.

HUM 211 Humanities (A,N,R) . . . . . 5 credit hours
A study in human values and achievements as represented in the arts, religions, philosophies and rational systems.

HUM 212 Humanities (A,N,R) . . . . . 5 credit hours
A continuation of HUM 211.

HUM 215 Ideas in a Changing Society (A,R). . . . . 3 credit hours
A study of current issues placed in historical and ideological perspective.

HUM 216 Jesus and the Challenge of Being Human (R) . . . . . 3 credit hours
The historical Jesus, his environment and his teachings.

HUM 225 Contemporary Chicano (A) . . . . . 3 credit hours
An interdisciplinary course dealing with current issues of the Chicano.

HUM 226 Comidas Chicanas (A) . . . . . 3 credit hours
A study of the history and folklore of comidas chicanas (cuisine), along with its position, traditional and contemporary, in the cultural matrix of the Chicano community.

HUM 299 Independent Study (A,N,R). . . . . 1 to 3 hours
See course description on page 34.

JOURNALISM

JOU 101 Introduction to Journalism (A,N,R) . . . . . 4 credit hours
Basic principles of journalism involving work on a college publication with 3 hours of laboratory work per week.

JOU 102 Introduction to Journalism (A,N,R) . . . . . 4 credit hours
Pre-requisite: JOU 101
A continuation of JOU 101

JOU 111 Reporting and Editing I (A,N,R). . . . 3 credit hours
Reporting, weighing evidence, interpreting issues and editing copy.

JOU 112 Reporting and Editing (A,N,R). . . . . 3 credit hours
Pre-requisite: JOU 211 or permission of instructor.
A continuation of JOU 111 with more opportunity for practical experience.

JOU 121 Photography as Communication (N,R) . . . . . 3 credit hours
Basic understanding of photographic equipment, materials and processes, and how they may communicate emotion, ideas, or facts.

JOU 122 Photography as Communication: Studio Practice (N,R). . . . . 3 credit hours
Introduction to indoor photography including lighting, composition, subject arrangement, camera support, background, etc.

JOU 210 Feature Writing (A,N,R). . . . . 3 credit hours
Feature writing for newspapers and magazines.

JOU 225 Photography as Communication: Outdoor Photography (N,R). . . . . 3 credit hours
Black and white outdoor photography with both classroom lectures/discussions and field trips.

JOU 226 Photo Journalism (N,R) . . . . . 3 credit hours
Photographic methods as applied to editorial and news photography.

JOU 240 Journalistic Advertising (N,R) . . . . . 3 credit hours
Advertising principles as applied to the print media, radio and television.

JOU 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

LITERATURE

LIT 100 Literature for Children (A,N,R) . . . . 3 credit hours
Survey of prose and poetry for teachers of children.

LIT 105 Introduction to Literature (A,N,R). . 3 credit hours
The short story: selected readings.

LIT 106 Introduction to Literature (A,N,R). . 3 credit hours
The novel: selected readings.

LIT 107 Introduction to Literature (A,N,R). . 3 credit hours
Poetry: selected readings.

LIT 110 Themes in Literature (R) . . . . . 3 credit hours
A thematic approach to literature.

LIT 120 Literature of Human Sexuality (A,N). . . . . 3 credit hours
Literature of the perception and verbalization of sexuality from ancient to modern times.

LIT 125 Introduction to Chicano Literature (A) . . . . . 3 credit hours
An overview of Chicano literature from its indigenous (native) roots to the present.

LIT 126 Native American Literature (A,N,R) . . . . . 3 credit hours
A survey of the literature of the native American.

LIT 128 Black Literature in America (A). . . . . 3 credit hours
A study of Black literature which includes methods of evaluation and analysis essential for understanding and appreciating the literary contributions of the Black writer.

LIT 201 Literature by and About Women: Selected Topics I (A,N,R) . . . . . 3 credit hours
Inter-disciplinary analysis of the role of women as characters and authors. Unique problems and insights of women writers emphasized.

LIT 202 Literature by and About Women: Selected Topics II (A,N,R) . . . . . 3 credit hours
Focus on contemporary literature with emphasis placed on alternatives for women as seen through literature.

LIT 205 Radical Feminist Literature (A,N,R) . . . . . 3 credit hours
An examination of auto-biographical accounts, fiction and other writings of feminists who espouse avante-garde life styles and/or political activism.

LIT 210 Science Fiction (A,N,R) . . . . . 3 credit hours
Current trends in science fiction: selected readings.

LIT 215 Cult and the Occult (A,N,R) . . . . . 3 credit hours
A study of cults and the occult — from the visionary to the diabolical.

LIT 216 Fantasy (A,N,R) . . . . . 3 credit hours
Plays, poems, stories and fables from all over the world.

LIT 217 Humor and Satire (A,N,R) . . . . . 3 credit hours
An examination of the literature of laughter and its underlying seriousness.

LIT 218 Detective Fiction: Crime (A,N,R). . . . . 3 credit hours
A study of detective, spy and mystery fiction as genre.

LIT 220 Ethnic Literature in America (N,R). . . . . 3 credit hours
A survey of native American writers.

LIT 225 Ethnic Literature in America (N,R). . . . . 3 credit hours
A survey of Chicano writers in America.

LIT 226 Ethnic Literature in America (N,R). . . . . 3 credit hours
A survey of Asian American writers.

LIT 227 Ethnic Literature in America (N,R). . . . . 3 credit hours
A survey of ethnic literature in American social evolution — Black literature.

LIT 228 Contemporary Chicano Literature (A) . . . . . 3 credit hours
This class will analyze the various literary styles of contemporary Chicano literature and students will express themselves through their own literary works and research.

LIT 229 Contemporary Black Literature (A,R) . . . . . 3 credit hours
An analytical and critical study of contemporary Black literature emphasizing the plight and protest of Black Americans in American society.

LIT 230 Literature of the American West (A,N,R) . . . . . 3 credit hours
Writers and writings of the American West.

LIT 240 Practicum in Chicano Literary Research (Bi-linqual) (N) . . . . . 3 credit hours
Research techniques using Chicano community as a laboratory: compile information in poesia (poetry), cuentos (stories), leyendas (legends), canciones (songs), medicanas (medicines), pachquismos (linguistic dialect), and the ways of the elders.

LIT 241 Survey of American Literature (A,N,R) . . . . . 3 credit hours
A comparative study of major American authors through the Civil War.

LIT 242 Survey of American Literature (A,N,R) . . . . . 3 credit hours
A continuation of LIT 241, covering the period for the Civil War to the present.

LIT 251 English Literature (A,N,R). . . . . 3 credit hours
A survey of major works from the Anglo-Saxon period through the Elizabethian period.

LIT 252 English Literature (A,N,R). . . . . 3 credit hours
A survey of major works from the 18th Century to the present.

LIT 261 Great Books I (A,N,R) . . . . . 3 credit hours
Close reading of some of the generally recognized classics of World Literature.

LIT 262 Great Books II (A,N,R). . . . . 3 credit hours
A continuation of LIT 261.

LIT 275 World Literature: Western Europe (A,N,R) . . . . . 3 credit hours
A study of development of Western European literature.

LIT 276 World Literature: Eastern Europe (N,R) . . . . . 3 credit hours
A study of development of Eastern European literature.

LIT 277 World Literature: Africa (N,R) . . . . . 3 credit hours
A study of development of African literature.

LIT 278 World Literature: Latin America (N,R) . . . . . 3 credit hours
A study of development of Latin American literature.

LIT 279 World Literature: Asia (N,R) . . . . . 3 credit hours
A study of development of Asian literature.

LIT 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

MUSIC

MUS 100 Ensemble: Chorus (A,N,R) . . . . . 1 credit hour
Study of choral styles and literature. (May be repeated for up to six hours credit)

MUS 101 History of Afro-American Music I (A) . . . . . 3 credit hours
A study of African music as one of the main sources of Black music in America. Emphasis will move from the music and musical instruments of Africa to the jazz age.

MUS 102 History of Afro-American Music II (A). . . . . 3 credit hours
The contemporary era beginning with the jazz age and moving to the present.

MUS 105 Ensemble: Band (N). . . . . 1 credit hour
Study of instrumental styles and literature. (May be repeated for up to six hours credit)

MUS 111 Theory and Harmony (A,N,R). . . . . 5 credit hours
The study of melody, harmony, rhythm, analysis, composition, sight singing and ear training.

MUS 112 Theory and Harmony (A,N,R). . . . . 5 credit hours
Pre-requisite: MUS 111.
Continuation of MUS 111.

MUS 115 Music for Children (A,N,R). . . . . 3 credit hours
Fundamentals for music for teachers in early childhood education.

MUS 120 Introduction to Chicano Music (A) . . . . . 3 credit hours
An examination of selected wor s in Mexican music from pre-Colombian time to present concentrating on regional works and on Twentieth Century composers.

MUS 125 Practicum in Chicano Coro (A) . . . . . 3 credit hours
Designed to encourage and develop student singing skills beginning with Chicano "corridos" or ballads and building to current songs of the Chicano movement.

MUS 131 Voice Class (A,N,R) . . . . . 1 credit hour
Study of vocal techniques.

MUS 132 Voice Class (A,N,R) . . . . . 1 credit hour
Pre-requisite: MUS 131.
Continuation of MUS 131.

MUS 140 Woodwind Methods (N) . . . . . 1 credit hour
Develop basic knowledge of the woodwind family, the problems, functions, possibilities and literature.

MUS 145 Brass Methods (N). . . . . 1 credit hour
Develop basic knowledge of the brass family, the problems, functions, possibilities and literature.

MUS146 Percussion Methods (N) . . . . . 1 credit hour
Develop basic knowledge of the percussion family, the problems, functions, possibilities and literature.

MUS 151 Piano Class (A,N,R) . . . . . 1 credit hour
Study of basic piano techniques including chords and accompaniment.

MUS 152 Piano Class (A,N,R) . . . . . 1 credit hour
Continuation of MUS 151.

MUS 161 Folk Guitar I (R) . . . . . 1 credit hour
Principles and techniques of folk guitar.

MUS 162 Folk Guitar II (R) . . . . . 1 credit hour
Continuation of MUS 162.

MUS 165 Guitar Class (A,N,R) . . . . . 1 credit hour
Fundamental techniques for guitar, chord study and related literature.

MUS 166 Guitar Class (A,N,R) . . . . . 1 credit hour
Continuation of MUS 165.

MUS 171 Introduction to Electronic Music (N). . . . . 2 credit hours
Exploration of techniques used in electronic music.

MUS 190 Music Appreciation (A,N,R) . . . . . 3 credit hours
Survey of music literature, style and form from inception to present day.

MUS 200 Choral Conducting (N) . . . . . 2 credit hours
Introduction to conducting patterns and techniques with emphasis on choral compositons and problems.

MUS 201 Introduction to Music I (R) . . . . . 3 credit hours
Study of musical styles, forms development, literature and composers from antiquity through Baroque.

MUS 202 Introduction to Music II (R) . . . . . 3 credit hours
Continuation of MUS 201, emphasizing impressionistic and contemporary.

MUS 205 Instrumental Conducting (N). . . . . 2 credit hours
Introduction to conducting patterns and techniques with emphasis on instrumental compositions and problems.

MUS 211 Advanced Theory and Harmony (N,R) . . . . . 5 credit hours
Pre-requisite: MUS 112
Continuation of MUS 112 with emphasis on chromatic and contemporary harmony, counterpoint and instrumentation.

MUS 212 Advanced Theory and Harmony (N,R) . . . . . 5 credit hours
Continuation of MUS 211.

MUS 231 Chorus: Theory and Practice I (R) . . . . . 3 credit hours
Choral literature from the classics to the contemporary including vocal techniques and diction.

MUS 232 Chorus: Theory and Practice II (R) . . . . . 3 credit hours
Continuation of MUS 231.

MUS 251 Piano Class for Advanced Keyboard Beginners (N) . . . . . 1 credit hour
Pre-requisite: MUS 151 and 152.
Continuation of MUS 152 with emphasis on ensemble playing, transposition and improvisation.

MUS 252 Piano Class for Advanced Keyboard Beginners (N) . . . . . 1 credit hour
Pre-requisite: MUS 251.
Continuation of MUS 251.

MUS 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

PHYSICAL EDUCATION

PHE 100 Group Activities (N,R) . . . . . 1 credit hour
Coed participation in soccer, volleyball, softball, basketball and field hockey.

PHE 101 First Aid (N,R) . . . . . 2 credit hours
The standard American red cross first aid course. The standard American red cross certificate (card) will be given on satisfactory completion of the course.

PHE 102 Advanced First Aid (N,R) . . . . . 2 credit hours
Cardio Pulmonary Resuscitation (or valid American red cross card).

PHE 105 Group Activities, Women (N,R) . . . . . 1 credit hour
Participation in activities designed to improve physical fitness and to improve skills in various team sports.

PHE 106 Horsemanship (N,R) . . . . . 1 credit hour
Beginning instruction in western style riding and horsemanship.

PHE 107 Canoeing . . . . . 1 credit hour
Basic strokes of canoeing, principles of water safety and self-rescue.

PHE 111 Beginning Archery (N,R) . . . . . 1 credit hour
Basic skills and techniques including target competition field shooting, equipment and terminology.

PHE 112 Intermediate Archery (N,R). . . . . 1 credit hour
Continuation of PHE 111 with emphasis on advanced skills in shooting.

PHE 121 Beginning Bowling (N,R) . . . . . 1 credit hour
Basic skills and techniques of bowling.

PHE 122 Intermediate Bowling (N,R). . . . . 1 credit hour
Pre-requisite: PHE 121
Continuation of PHE 121.

PHE 131 Beginning Golf (N,R) . . . . . 1 credit hour
Introduction to golf, its origin and development, with emphasis on basic skills and techniques.

PHE 132 Intermediate Golf (N,R). . . . . 1 credit hour
Pre-requisite: PHE 131.
Advanced skills in golf.

PHE 141 Beginning Swimming (N,R) . . . . . 1 credit hour
Basic fundamentals of swimming, includes basic crawl, elementary backstroke and life support.

PHE 142 Intermediate Swimming (N,R). . . . . 1 credit hour
Side stroke, elementary backstroke, surface dives, underwater swimming and endurance of crawl.

PHE 143 Advanced Swimming (N,R) . . . . . 1 credit hour
Advanced skills and review of swim strokes, trudgen crawl, butterfly and diving.

PHE 144 Senior Lifesaving (N,R) . . . . . 1 credit hour
Pre-requisite: PHE 143 or pass pre-test.
Advanced lifesaving course including self survival, rescue techniques and general first aid.

PHE 145 Water Safety Instructor Certification (N,R) . . . . . 1 credit hour
Pre-requisite: Advanced swimming and senior lifesaving or current advanced lifesaving certificate.
Methods of teaching water safety, skill analysis and correction. Course leads to American red cross instructor certification.

PHE 146 Scuba Diving (N,R) . . . . . 1 credit hour
Basic instruction and skills in scuba diving. Aqua charges will be required for participants in this class and individuals must furnish own scuba diving equipment or rent. (laboratory hours required)

PHE 151 Beginning Tennis (N,R) . . . . . 1 credit hour
Techniques and skills along with rules and regulations of the game.

PHE 152 Intermediate Tennis (N,R). . . . . 1 credit hour
Advanced skills, team play and game strategy.

PHE 153 Advanced Tennis (N,R) . . . . . 1 credit hour
Individual competition and team play.

PHE 160 Social Dancing (N) . . . . . 1 credit hour
Introduction to social dancing and various dance formations and rhythms. Laboratory hours required.

PHE 161 Beginning Collegiate Dance (N,R). . . 1 credit hour
Exercises fundamental to theatrical dancing.

PHE 162 Beginning Collegiate Dance (N,R). . . 1 credit hour
Theatrical dancing with level step combinations.

PHE 165 Square and Folk Dance (N,R) . . . . . 1 credit hour
Introduction to various customs and traditions of square and folk dance. Emphasis on basic steps, rhythms and structure of these dances. Laboratory hours required.

PHE 166 Ice Skating (N,R) . . . . . 1 credit hour
Basic instruction and skills of ice skating.

PHE 170 Cross-country Skiing (N,R) . . . . . 1 credit hour
Skills and techniques for cross country skiing.

PHE 171 Beginning Skiing (N,R) . . . . . 1 credit hour
Basic techniques and skills for beginning skier.

PHE 172 Intermediate Skiing (N,R) . . . . . 1 credit hour
Continuation of PHE 171.

PHE 173 Advanced Skiing (N,R)..... 1 credit hour
Biomechanics of skiing. Parallel, wedin, racing and free style introduction.

PHE 175 Ski Instruction Certification (N,R)..... 3 credit hours
Preparation for teaching skiing. Includes (a) teaching methodology, (b) A.T.M. sequence, (c) biomechanics, (d) racing free style, (e) ski tuning and maintenance.

PHE 180 Basic Mountaineering (N,R)..... 3 credit hours
Mountain climbing techniques, including route finding and rope handling.

PHE 181 Beginning Rock Climbing (N,R)..... 1 credit hour
(Five weeks only)
Fundamentals of hand and foot holds and the use of ropes.

PHE 182 Intermediate Rock Climbing (N,R) .. 1 credit hour
(Five weeks only)
Continuation of PHE 181.

PHE 183 Advanced Rock Climbing (N,R)..... 1 credit hour
(Five weeks only)
Continuation of PHE 182.

PHE 185 Snow and Glacier Climbing (R) .... 3 credit hours
Use of ice axe, crampons and rope, including route finding and crevasse rescue.

PHE 186 Orienteering (R)..... 3 credit hours
Competitive cross country walking and running using map and compass.

PHE 187 Map and Compass for the Outdoorsman (R)..... 3 credit hours
Route-finding, map reading and navigational principles. Field trips.

PHE 188 Hiking and Backpacking (N,R) . 1 to 3 credit hours
The fundamentals of hiking and backpacking involving the factors of clothing, equipment, weather, shelter and fire building.

PHE 189 Climbing/Backpacking Expedition (R) ..... 3 credit hours
Expedition covering seven to ten days hiking and climbing in remote North American regions.

PHE 191 Beginning Self Defense (N,R) ..... 1 credit hour
Basic skills and techniques on the art of self defense.

PHE 192 Intermediate Self Defense (N,R)..... 1 credit hour
Advanced skills and techniques.

PHE 193 Advanced Self Defense (N,R) ..... 1 credit hour
Pre-requisite: Intermediate self defense.
Emphasis on perfection of self defense movement.

PHE 200 Physical Education in the Elementary School (N,R)..... 2 credit hours
Theory and techniques involved in teaching elementary school physical education. Includes study of activity areas, program development and organization of learning activities.

PHE 201 Beginning Martial Arts (N,R)..... 2 credit hours
The history, philosophy, religion, psychology and skills of the martial arts of Karate, Judo, Ju-jitsu, Aikido, and Kendo.

PHE 202 Intermediate Martial Arts (N,R) ... 2 credit hours
Continuation of PHE 201.

PHE 203 Advanced Martial Arts (N,R)..... 2 credit hours
Continuation of PHE 202.

PHE 205 Introduction to Physical Education (N,R)..... 1 credit hour
Orientation to history of physical education, objectives, opportunities in the field, professional organizations and literature available.

PHE 206 Physical Education Activities (N,R) . 2 credit hours
Instruction and teaching techniques of sports (Lecture and laboratory hours required)

PHE 207 Physical Fitness for Women..... 2 credit hours
Fitness program, emphasis on theory of exercise, fundamental movements, body mechanics and health.

PHE 208 Physical Fitness for Men..... 2 credit hours
Lecture and laboratory course with emphasis on body conditioning, theory of exercise and actions needed to work muscle groups.

PHE 209 Rules and Mechanics of Officiating (N,R)..... 2 credit hours
Study of rules and mechanics of officiating in group sports.

PHE 211 Beginning Conditioning (N,R)..... 1 credit hour
Basic program of body conditioning to meet individual needs.

PHE 212 Intermediate Conditioning (N,R)..... 1 credit hour
Continuation of PHE 211.

PHE 251 Beginning Yoga (N,R) ..... 1 credit hour
Meditation techniques and proper breathing to relax mind and body.

PHE 252 Intermediate Yoga (N,R)..... 1 credit hour
Intermediate skills and techniques of meditation along with learning to relax the mind and body.

PHE 253 Advanced Yoga (N,R)..... 1 credit hour
Concepts of Eastern training of body, mind and spirit through physical culture.

PHE 260 Tumbling (N,R)..... 1 credit hour
Skill progressions and teaching of stunts and tumbling.

PHE 261 Ballet (N,R) ..... 1 credit hour
Emphasis on exercise fundamentals of ballet.

PHE 262 Ballet (N,R) . . . . . 1 credit hour
Continuation of beginning ballet.

PHE 265 Gymnastics (N,R) . . . . . 1 credit hour
Skills, teaching techniques and progression of gymnastics.

PHE 280 Mountaineering Ethics (R) . . . . . 2 credit hours
The motivation, esthetics, and ethics of mountaineering, including conservation principles. Field trips.

PHE 281 Wilderness Survival (R) . . . . . 3 credit hours
The physical, physiological and psychological principles of survival. Field trips.

PHE 285 Mountaineering Photography (R) . . 3 credit hours
The fundamentals of mountaineering and mountain photography.

PHE 291 Adaptive Physical Education (N,R) . 2 credit hours
Conditioning involving vascular improvement, weight control, balance and body image.

PHE 292 Techniques of Adaptive Physical Education (N,R) . . . . . 2 credit hours
Continuation of PHE 291.

READING

REA 010 Introduction to Study Skills (A) . . . . 3 credit hours
A developmental program in the skills of textbook reading, out-lining, note-taking, and test taking.

REA 011 Introduction to Basic Reading Skills I (A) . . . . . 3 credit hours
A developmental program in basic reading skills.

REA 012 Introduction to Basic Reading Skills II (A) . . . . . 3 credit hours
A developmental program in reading comprehension.

REA 100 Basic Reading Skills (A,N,R,) . . . . . 3 credit hours
Mastery of basic reading skills.

REA 101 Skills for College Reading (A,N,R) . . 3 credit hours
Reading efficiency through development of skills and improved comprehension.

REA 102 Skills for College Reading (A,N,R) . . 3 credit hours
Emphasis on practicing various skills of efficient reading.

REA 110 Speed Reading (A,N,R) . . . . . 3 credit hours
Increased speed, a more flexible reading pace and better comprehension.

REA 200 College Reading (N,R) . . . . . 3 credit hours
For advanced readers who would like to improve speed, comprehension, and analytical techniques.

REA 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

SKILL CENTER INSTRUCTIONAL PROGRAM

SKC 010 GED Preparation (A,N,R) . . . . . 1 to 6 credit hours
General skills needed to pass the GED exam.

SKC 015 GED Mathematics (N,R) . . . . . 1 to 6 credit hours
Preparing the student to interpret and pass the GED mathematics test.

SKC 016 GED Grammar and Usage (A,N,R). . . . . 1 to 6 credit hours
Preparing the student to interpret and pass the GED spelling, grammar and usage sections of the exam.

SKC 017 GED Reading: Social Science (A,N,R). . . . . 1 to 6 credit hours
Preparing the student to take and pass the GED social science exam.

SKC 018 GED Reading: Natural Sciences (A,N,R) . . . . . 1 to 6 credit hours
Preparing the student to interpret and pass the GED natural sciences sections of the exam.

SKC 019 GED Reading: Literature (A,N,R). . . . . 1 to 6 credit hours
Preparing the student to take and pass the GED literature exam.

SPANISH

SPA 101 Basic Applied Spanish (A,N,R). . . . . 3 credit hours
Basic conversational Spanish for enjoyment and/or for practical use.

SPA 102 Basic Applied Spanish (A,N,R). . . . . 3 credit hours
Continuation of SPA 101

SPA 111 First Year Spanish . . . . . 5 credit hours
Basic principles of grammar, reading and writing skills, correct pronunciation, and basic conversation.

SPA 112 First Year Spanish (A,N,R). . . . . 5 credit hours
Pre-requisite: SPA 111 or permission of the instructor.
Continuation and expansion of SPA 111.

SPA 121 Spanish for the Chicano (A) . . . . . 5 credit hours
For the bilingual student (equivalent to SPA 111)

SPA 122 Spanish for the Chicano (A) . . . . . 5 credit hours
Pre-requisite: SPA 121 or permission of the instructor.
Continuation of SPA 121.

SPA 130 Idioma Aztekah (Aztec Language) (A) . . . . . 3 credit hours
The basic grammar and elementary vocabulary of the true Mexican language called Nahuatl. Philosophy, culture, and history will also be discussed.

SPA 211 Intermediate Spanish (A,N,R) . . . . . 3 credit hours
Pre-requisite: SPA 112 or 122 or permission of the instructor.
A continued study of Spanish language skills: listening, speaking, reading and writing.

SPA 212 Intermediate Spanish (A,N,R) . . . . . 3 credit hours
Pre-requisite: SPA 211 or permission of the instructor.
Continuation and expansion of SPA 211.

SPA 220 Dialects of the Southwest (A). . . . . 3 credit hours
Pre-requisite: One semester Spanish or equivalent.
Students will study the development of language and dialect relevant to the Chicano. Language emphasis will be on Spanish spoken in the Chicano community.

SPA 221 Current Spanish — Spoken and Written (A,N,R) . . . . . 3 credit hours
Second year course leading to more fluent and current usage of Spanish. May substitute for SPA 211 sequence.

SPA 222 Current Spanish — Spoken and Written (A,N,R) . . . . . 3 credit hours
Pre-requisite: SPA 221 or permission of instructor. Continuation of SPA 221.

SPA 225 Spanish for the Professional (A) . . . 3 credit hours
Job-related Spanish for the professional including technical vocabulary for the professional.

SPA 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

SPEECH

SPE 100 Motivational Speech (R). . . . . 3 credit hours
Basic principles of sales and persuasive speech applied to specific occupations.

SPE 101 Introduction to Speech (A,N,R) . . . . 3 credit hours
Skills in communication theory and public speaking.

SPE 102 Public Speaking (A,N,R). . . . . 3 credit hours
Continuation of SPE 101.

SPE 107 Occupational Communication (A,N,R) . . . . . 1 to 3 credit hours
Basic communication skills with emphasis on speaking and listening and on-the-job communication. (Can be taken as COM 107)

SPE 111 Forensic Activity I (N,R). . . . . 3 credit hours
Pre-requisite: SPE 101 or equivalent.
Techniques of debate and extemporaneous speaking.

SPE 112 Forensic Activity II (N,R) . . . . . 3 credit hours
Pre-requisite: SPE 101 or equivalent.
Techniques of oratory and oral interpretation.

SPE 120 Oral Interpretation of Literature (A,N,R) . . . . . 3 credit hours
Learning to select, analyze and perform various literary forms. (For the beginner).

SPE 200 Business and Occupational Public Speaking (A,N,R). . . . . 3 credit hours
Pre-requisite: SPE 101 or permission of the instructor.
Effective oral reporting and use of audio-visual aids in business and occupations.

SPE 205 Voice and Diction (A,R) . . . . . 3 credit hours
The mechanism of voice production. Emphasis on development of individual voice production.

SPE 211 Intermediate Public Speaking (A,N,R) . . . . . 3 credit hours
Pre-requisite: SPE 101 or permission of the instructor.
Skill necessary for effective, intelligent and responsible speech.

SPE 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 34.

INDEPENDENT STUDY

299 Independent Study (A,N,R). . . . 1 to 3 credit hours
Independent study (Course No. 299) is available in each of the major areas within the Division of Communication and Arts (i.e., English, foreign language, speech, etc.) except physical education and communications laboratory. The course provides opportunity for the serious-minded student to engage in intensive study and research on a specific topic under the direction of a qualified faculty member. Prerequisite for enrollment is permission of the Director of the Division of Communication and Arts and the assigned instructor. The number of quarter hours of credit (1-3) will be determined by the Division Director.

DIVISION OF SCIENCE AND MATHEMATICS

COURSE DESCRIPTIONS

Where a course description does not indicate the campus by the key A, N, or R, we would suggest you call the campus of your choice for information.

BIOLOGY

BIO 101 Biology for Water/Wastewater Programs (R) . . . . . 4 credit hours
Consists of an introduction to ecological principles, biological chemistry and processes, and variety in living organisms. The course is directed toward water/wastewater systems. (3 hours lecture and 3 hours laboratory per week)

BIO 102 Sanitary Microbiology (R). . . . . 3 credit hours
Prerequisite: BIO 101
A basic course emphasizing the procedures for isolating, identifying, and differentiating between those microorganisms found in water, waste water, solid waste, and those problems relating to waste water treatment, stream sanitation, and public health. (2 hours lecture and 3 hours laboratory per week)

BIO 105 Microbiology for Dental Assistants (N). . . . . 1 credit hour
A mini-course emphasizing microorganisms of importance to dentistry and methods of controlling bacteria. (1 hour lecture and 1 hour laboratory per week)

BIO 106 Fundamental Concepts of Human Biology (A,N) . . . . . 3 credit hours
A survey course for students needing an understanding of basic biological and chemical concepts as applied to the human body. The basic cellular and chemical aspects of life are related to a brief survey of body organ systems. (3 hours per week, no laboratory)

BIO 107 VD and You (A,N). . . . . 1 credit hour
A study of the prevalent venereal diseases, causes of the VD epidemic in the world today, and personal and public preventive measures. (1 hour per week, no laboratory)

BIO 108 Health and Modern Living (N) . . . . . 3 credit hours
A survey of the basic issues of human interrelationships and diseases which affect personal, family, and community health. (3 hours per week, no laboratory)

BIO 111 Human Anatomy and Physiology I (A,N,R) . . . . . 4 credit hours
A detailed study of the principles of human biology as seen through an in-depth examination of the gross and microscopic anatomical structures of the human body and of the relationship of these structures to their function. (3 hours lecture and 3 hours laboratory per week)

BIO 112 Human Anatomy and Physiology II (A,N,R) . . . . . 4 credit hours
Prerequisite: BIO 111
A continuation of BIO 111. (3 hours lecture and 3 hours laboratory per week)

BIO 115 Introduction to Microbiology (N) . . . 3 credit hours
Prerequisite: BIO 112 or SCI 101
An introduction to microbiology with an emphasis on epidemiology and its relationship to the health science occupations. (2 hours lecture and 3 hours laboratory per week)

BIO 116 Summer Mountain Survival and Ecology (N,R). . . . . 2 credit hours
Prerequisite: Consent of Instructor
An integrated course in basic wilderness travel and general biology. The basic thrust of the course will be the accumulation of practical knowledge. Ecology, conservation, and safety will be stressed. (6 hours laboratory per week)

BIO 117 Winter Mountain Survival and Ecology (N,R). . . . . 2 credit hours
Prerequisite: Consent of Instructor
A course for those people who enjoy the winter outdoors and want to know more about it. This is a learning by doing course which involves planning cross-country ski trips, gathering the required equipment and supplies, learning the necessary fundamentals about the environment, and taking a series of overnight camping excursions and cross-country ski trips. (6 hours laboratory per week)

BIO 121 Introduction to the Environment (A,N,R). . . . . 3 credit hours
A study of the basic principles of ecology, population dynamics, man's impact upon natural ecosystems, and possible solutions to the problems posed to man in his environment. (3 hours per week, no laboratory)

BIO 122 Field Experiences — Environment (A,N). . . . . 1 credit hour
Prerequisite: BIO 121 or concurrent enrollment in BIO 121
A descriptive field study of the natural ecosystems of the front range region around Denver, with extensive field trips designed to accompany BIO 121. (3 hours laboratory per week)

BIO 125 Urban Ecology (A,N,R). . . . . 3 credit hours
A course designed to view and study urban environments with an ecological perspective. The urban environment will be dealt with from two broad viewpoints: (1) physical, (2) biological. The physical aspect will include such areas as micro and macromates, geology, energy, and physical services such as water and air treatment. The biological aspect will deal with those vegetational and animal characteristics germane to an urban environment. The dominant organism will be man. The study of water will lead to a treatment of history, transportation, industry, and housing in the city. The course will stress basic ecological principles and compare the differences between natural ecosystems and urban ecosystem. (3 hours per week, no laboratory)

BIO 126 Field Biology (A,N,R) . . . . . 2 credit hours
A field study of the biomes, life zones, and successions in the front range with an introduction to plant and animal identification and quantitative ecology. This course may also consist of field studies in ecosystems outside Colorado; for example, desert ecology, shore ecology, involving a week or more study during a semester break. (1 hour lecture and 3 hours laboratory per week)

BIO 127 Microbes and Man (N) . . . . . 2 credit hours
A microbiology course for nonscience students. A presentation of the interesting activities and influences of microorganisms on man and his environment. (2 hours per week, no laboratory)

BIO 131 General College Biology I (A,N,R) . . 4 credit hours
This introductory course in biology will consider living systems from the environmental, evolutionary, and behavioral point of view. Topics will include ecology, population dynamics, adaptation, microscopy and biological diversity, individual and social behavior. (3 hours lecture and 3 hours laboratory per week)

BIO 132 General College Biology II (A,N,R) . . . . . 4 credit hours
Prerequisite: BIO 131 or permission of instructor.
Deals with living systems from a functional and developmental point of view. Topics include cellular structure and function, major biochemical concepts, reproduction, heredity, and evolutionary mechanisms. (3 hours lecture and 3 hours laboratory per week)

BIO 137 Human Sexuality and Reproduction (A,N,R) . . . . . 3 credit hours
An introductory course dealing with the various aspects of human reproduction. Topics include overpopulation, human sexual response, pregnancy, birth, contraception, and venereal diseases. (3 hours per week, no laboratory)

BIO 147 Human Heredity (A,N,R) . . . . . 3 credit hours
The biological aspects of race and human heredity will be considered, including the genetic foundations, the range of human variability, racial mixtures, and the usefulness of biological factors in understanding racial differences. (3 hours per week, no laboratory)

BIO 157 Drugs: Their Use and Abuse (A,N,R) . . . . . 3 credit hours
A study of some of the drugs commonly used in our society today. The effects on the body of such drugs as the alcohols, amphetamines, barbiturates, opiates, hallucinogens, marijuana, and nicotine will be examined. (3 hours per week, no laboratory)

BIO 167 The Biology of Women (A,N,R) . . . . . 3 credit hours
This course deals with all biological aspects of a woman's life from the basis of female roles, through anatomy and physiology, sexuality, childbearing, basic health and diet, and finally to suggested solutions to the betterment of the female and her body. (3 hours per week, no laboratory)

BIO 205 General Microbiology (N,R) . . . . . 4 credit hours
Prerequisite: BIO 132 or consent of instructor
A survey of major microbial groups with special emphasis on bacteria. Emphasis is on basic principles and techniques in microbiology as well as identification, structure, function and role in nature and disease. (3 hours lecture and 3 hours laboratory per week)

BIO 206 Environmental Biology (A,N,R) . . . . 4 credit hours
Prerequisite: BIO 132
An introduction to the principles of ecological systems, world biomes, population dynamics, and distribution or organisms. (3 hours lecture and 3 hours laboratory per week)

BIO 216 Cell Biology (A,N,R) . . . . . 4 credit hours
Prerequisite: BIO 132 or consent of instructor
An introduction to the cell as the fundamental unit of function and structure in all living systems. Morphological and physiological characteristics common to all cells will be emphasized. (3 hours lecture and 3 hours laboratory per week)

BIO 226 Developmental Biology (A,N,R). . . . . 4 cedit hours
Prerequisite: BIO 132 or consent of instructor
An introduction to the changes occurring during organismic development and differentiation. Gene action, biochemical regulation, and environmental factors will be stressed. (3 hours lecture and 3 hours laboratory per week)

BIO 236 Plant Biology (R) . . . . . 4 credit hours
Prerequisite: BIO 132
A survey of the main plant groups built around the photosynthetic, reproductive, and other functions of a living plant and how these functions express themselves at and through different levels of structure. (3 hours lecture and 3 hours laboratory per week)

BIO 246 Genetics (A,N) . . . . . 5 credit hours
Prerequisite: BIO 132 or permission of instructor
A broad survey of the field of hereditary mechanisms which will be of interest to students in biology, psychology, anthropology, and to those who wish to learn something of the field of genetics. Topics to be covered will include transmission of traits, cellular aspects of heredity, mechanisms of gene action, and population genetics. Relevant areas of human genetics will be incorporated into each of these topics. (4 hours of lecture and 3 hours of laboratory per week)

BIO 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 41.

CHEMISTRY

CHE 101 Fundamentals of Chemistry I (A,N,R) . . . . . 4 credit hours
Prerequisite: MAT 106 or MAT 111 or equivalent

A first course in the fundamentals of chemistry designed for nonscience majors, students in occupational programs, or students with no high school chemistry. The student completing the sequence of CHE 101 and CHE 102 will have a general background in basic chemistry and an introduction to organic and biochemistry. (3 hours lecture and 3 hours laboratory per week)

CHE 102 Fundamentals of Chemistry II (A,N,R). . . . . 4 credit hours
Prerequisite: CHE 101
A continuation of CHE 101. (3 hours lecture and 3 hours laboratory per week)

CHE 109 Preparation for College Chemistry (A,N,R) . . . . . 4 credit hours
A one semester course designed primarily for students with some background in chemistry who need review or new information in specific background areas before they are prepared for the general college chemistry course (CHE 111). Instruction will concentrate on four major areas: inorganic nomenclature, stoichiometry, simple models of the chemical bond, and several types of chemical reactions. (3 hours lecture and 3 hours laboratory per week)

CHE 111 General College Chemistry I (A,N,R) . . . . . 5 credit hours
Prerequisite: CHE 102 or 1 year of high school chemistry or MAT 112 or consent of instructor.
CHE 111 and CHE 112 constitute a two-semester sequential course in the principles of college chemistry. Designed for science majors and students in preprofessional programs. (4 hours lecture and 3 hours laboratory per week)

CHE 112 General College Chemistry II (A,N,R). . . . . 5 credit hours
Prerequisite: CHE 111
Continuation of CHE 111. (4 hours lecture and 3 hours laboratory per week)

CHE 121 Chemistry for a Changing Society I (R) . . . . . 3 credit hours
A study of basic chemical principles in a series of topics of consumer interest, including: food and additives, fabrics, plastics, metals, cleaning agents, and health care products. No previous chemistry background is required. (3 hours per week, no laboratory)

CHE 122 Chemistry for a Changing Society II (R). . . . . 3 credit hours
A study of basic chemical principles in a series of environmental topics, including: composition of the atmosphere and natural waters, and their pollution; recycling; thermodynamics, fuels, and energy alternatives. No previous chemistry background is required. (3 hours per week, no laboratory)

CHE 201 Organic Chemistry I (A,N,R) . . . . . 5 credit hours
Prerequisite: CHE 112 or equivalent
CHE 201 and CHE 202 are a sequence in organic chemistry designed primarily for science majors, premedical and predental students, and others who desire a knowledge of the chemistry of organic compounds. A structural and mechanistic approach to syntheses, properties and behavior of chemically and biologically important compounds is stressed. Laboratory emphasis is on basic techniques, synthetic procedures, and modern instrumental analyses. (3 hours lecture and 6 hours laboratory per week)

CHE 202 Organic Chemistry II (A,N,R). . . . . 5 credit hours
Prerequisite: CHE 201
Continuation of CHE 201. (3 hours lecture and 6 hours laboratory per week)

CHE 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 44.

COMPUTER SCIENCE

CSC 105 Computers and You (A,R) . . . . . 3 credit hours
For students with nontechnical backgrounds who desire experience in using the computer for problem solving in the social and biological sciences, education, or business. Includes flow charting and programming methods, modeling and simulations, statistical packages, data base handlers, and digital process control techniques. (2 hours lecture and 3 hours laboratory per week)

CSC 201 Introduction to Computer Science I (A,N,R) . . . . . 4 credit hours
Prerequisite: MAT 111
CSC 201 and CSC 202 are a sequence in computer science covering programming methods, using Fortran and assembly language programming for both numeric and nonnumeric problems. Includes machine architecture, digital representation of data, string manipulation, compilers, and assemblers. (3 hours lecture and 3 hours laboratory per week)

CSC 202 Introduction to Computer Science II (A,N,R). . . . . 4 credit hours
Prerequisite: CSC 201 or consent of instructor
Continuation of CSC 201. (3 hours lecture and 3 hours laboratory per week)

CSC 205 Computer Methods for Scientific Studies (A,N,R). . . . . 3 credit hours
Prerequisite: MAT 111
An introduction to numerical problem solving using a high level computer language with scientific applications. Includes these language elements: control statements, arithmetic operations, arrays, subprograms, and input/output statements. (2 hours lecture and 3 hours laboratory per week)

CSC 211 Computer Methods for Scientific Studies I (A,N,R) . . . . . 4 credit hours
Prerequisite: MAT 111
An introduction to numerical problem solving using a high level computer language with scientific applications. Includes these language elements: control statements, arithmetic operations, arrays, subprograms, and input/output statements. (3 hours lecture and 3 hours laboratory per week)

CSC 212 Computer Methods for Scientific Studies II (A,N,R). . . . . 4 credit hours
A continuation of CSC 211 with emphasis on structured programming, file manipulation, string variables, and more advanced programming techniques applied to scientific problems. (4 hours lecture and 4 hours laboratory per week)

CSC 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 41.

EARTH SCIENCE

EAS 101 Physical Geology (R) . . . . . 4 credit hours
An introductory study of the earth. Emphasis is on recognizing earth materials, discovering the relationship between crustal movements and the earth's interior, mountain building, metamorphism, volcanism, and earthquakes; and investigating the role of weathering, landslides, streams, waves, wind, glaciers, and groundwater in shaping the land surface. Laboratories include studies of Rocky Mountain geology through field investigations, field trips, and museum tours. EAS 101 and EAS 102 constitute a one-year course in geology; they need not be taken in sequence. (3 hours lecture and 3 hours laboratory per week)

EAS 102 Historical Geology (R) . . . . . 4 credit hours
An introductory study of the physical and biological origin and development of the earth through the vast span of geologic time. Emphasis is on investigating and interpreting sedimentary rocks, the record of ancient environments, fossil life forms, and physical events, all within a framework of shifting crustal plates. Laboratories include studies of Rocky Mountain geology through field investigations, field trips, and museum tours. EAS 101 and EAS 102 constitute a one-year course in geology; they need not be taken in sequence. (3 hours lecture and 3 hours laboratory per week)

EAS 105 The Geology of the Regional National Parks and Monuments (R) . . . . . 3 credit hours
This course will examine the geologic history of the National Parks and Monuments within a day's ride of Denver. Field trips will be taken. (3 hours per week, no laboratory)

EAS 106 Environmental Geology of Colorado (R) . . . . . 4 credit hours
A study of the environment from a geologic perspective. Many examples taken from Colorado and elsewhere will illustrate problems of land use, geologic hazards, mineral resources, and energy needs for the future. Laboratory work involves field trips to local areas to examine landslides, swelling soils, dams, and river floodplains as well as indoor work with rocks, minerals, topographic, and geologic maps. (3 hours lecture and 3 hours laboratory per week)

EAS 107 Airphoto Interpretation (R) . . . . . 3 credit hours
An introduction to our environment using airphotos, maps, and remote sensing data. Emphasis is on the development of skills and reasoning ability required for the interpretation of geologic features and aspects of forestry, agriculture, land use, engineering, urban planning, and industrial problems. Laboratory work includes practical use of the stereoscope, simple photogrammetric instruments, maps, photomaps, and airphotographs. (1 hour lecture and 6 hours laboratory per week)

EAS 108 Weather and Climate (R) . . . . . 4 credit hours
The behavior of the atmosphere and its influence on man's activities. Topics include weather observation, solar radiation, pressure and wind, precipitation, the climates of the earth, and theories of climate change. (3 hours lecture and 3 hours laboratory per week)

EAS 115 Mineral Resources and the Future (R) . . . . . 1 credit hour
This course will analyze the world's mineral wealth, its distribution, and the potential effects on the U.S. lifestyle. (1 hour per week, no laboratory)

EAS 119 The Great Ice Age (R) . . . . . 1 credit hour
This course will analyze the effects of the Great Ice Age on the development of North America and will also explore theories of climatic change. (1 hour per week, no laboratory)

EAS 120 Weather at Its Worst (R) . . . . . 1 credit hour
This course will analyze the causes of tornadoes, hurricanes, thunderstorms, and drought. (1 hour per week, no laboratory)

EAS 125 Continental Drift (R) . . . . . 1 credit hour
The history of continental movement and its relationship to earthquakes and volcanoes and the history of life. (1 hour per week, no laboratory)

EAS 126 Volcanoes and Earthquakes (R) . . . 1 credit hour
Great natural disasters: their causes, results, prediction, and impact on society. (1 hour per week, no laboratory)

EAS 201 Introduction to Mineralogy (R). . . . . 4 credit hours
A study of minerals, their occurrences, origins, description, and identification. Topics will include history of mineralogy and lore of gems, physical properties of minerals, crystallography, origin and occurrence of mineral deposits. Includes mineral identification with spectographic analyzer and simple chemical techniques as well as hand specimen identification. Field trips will be taken to local mineral collecting areas. (3 hours lecture and 3 hours laboratory per week)

EAS 202 Introduction to Petrology (R). . . . . 4 credit hours
Prerequisite: EAS 201 or consent of instructor
Using examples from Colorado, the occurrence, description, and origin of igneous, metamorphic, and sedimentary rocks will be studied. The relation of ore deposits to the rock framework of Colorado will also be discussed. Includes preparation and description of rock thin sections using the polarizing microscope as well as field trips to outstanding geologic localities. (3 hours lecture and 3 hours laboratory per week)

EAS 205 Geology of Colorado (R) . . . . . 2 credit hours
A summer course consisting of field trips to classic geologic localities in Colorado. One-day trips in the front range and trips to the western slope will be taken. (1 hour lecture and 3 hours laboratory per week)

EAS 206 Geology Field Experiences (R) . . . . . 2 credit hours
Prerequisite: Consent of instructor
In-depth field studies into the geology of specific regions both within and outside of Colorado. A field trip of several days' length to the study area will constitute the major activity of the course. The specific area of investigation will be indicated in the schedule of classes each time the course is offered. (1 hour lecture and 3 hours laboratory per week)

EAS 207 Geologic Field Methods (R) . . . . . 2 credit hours
Prerequisite: EAS 101 and EAS 102
An introduction to geologic mapping and methods of field investigation. Emphasis is on field identification of rocks, use of geologic instruments such as the Brunton compass, hand level, Jacob's staff, chain, etc., preparing geologic maps, sampling techniques, note-taking, measuring and compiling columnar sections, and writing geologic reports. Laboratory work is held outdoors. (1 hour lecture and 3 hours laboratory per week)

EAS 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 41.

MATHEMATICS

MAT 090 Basic Operations on Whole Numbers (A) . . . . . 3 credit hours
Prerequisite: Permission of instructor
Designed to strengthen skills in adding, subtracting, multiplying, and dividing whole numbers; this course offers diagnostic testing and individualized instruction, with the opportunity for self-paced progress. In addition to whole numbers, the basic ideas of fractions, decimals, percent, and measurement are available for exploration. (3 hours per week)

MAT 101 Applied Mathematics I (A,N,R). . . . . 1 to 3 credit hours
FOR INDUSTRIAL OCCUPATIONS
Applications of elementary mathematics in industrial occupations. Topics include fractions, decimals, percents, ratio and proportion, powers and roots, weights and measures, working with formulas and simple equations, and introduction to geometry. Students registering for less than 3 semester hours must have the approval of their advisor and the Division of Science and Mathematics. (1 to 3 hours per week)

MAT 102 Applied Mathematics II (A,N,R) . . . . . 1 to 3 credit hours
Prerequisite: MAT 101
FOR INDUSTRIAL OCCUPATIONS
A continuation of the study of basic geometry including polygons, circles, solid figures, followed by basic trigonometry. Students registering for less than 3 semester hours must have the approval of their advisor and the Division of Science and Mathematics. At North Campus all of the geometry topics are included in MAT 101. Additional topics pertaining to mathematics for electronics are taught in MAT 102 at both North Campus and Red Rocks Campus. (1 to 3 hours per week)

MAT 105 Selected Topics in Mathematics (A,N) . . . . . 1 to 2 credit hours
Prerequisite: Consent of Instructor
The topics covered include fractions, decimals and percents, ratio and proportion, solving word problems, exponents, dimensional analysis, etc., as they are applied in certain areas of the physical sciences. Individuals' needs are assessed by an initial diagnostic exercise which determines what material each student covers. (1 to 2 hours per week)

MAT 106 Introduction to Mathematics (A,N,R) . . . . . 3 credit hours
Designed for students who need a comprehensive review of arithmetic. Topics include the fundamental operations of whole numbers, fractions, decimals and percentages, proportion, operations with signed numbers, and equations. (3 hours per week)

MAT 107 Mathematics for Electronics (A) . . . . . 5 credit hours
Prerequisite: MAT 106 or equivalent
Develops mathematical skills needed in electronics. Topics covered include: powers of ten, scientific notation, working with electronic units, use of the electronic calculator, basic algebra, Ohm's law and power formulas and related direct current circuits, system of equations, elementary trigonometry, and alternating current circuits. (5 hours per week)

MAT 108 Hand-Held Calculator (A,N,R) . . . . . 1 credit hour
Prerequisite: MAT 106 or equivalent
Designed to introduce the concepts of scientific notation, estimation, significant digits, and algebraic hierarchy as applied to the use of the calculator for computation. (1 hour per week)

MAT 111 Introductory Algebra (A,N,R). . . . . 3 credit hours
Prerequisite: MAT 106 or equivalent
A first course in algebra designed for the student who has had less than one year of high school algebra or for those who need a review. Manipulation of algebraic expressions, solving first degree equations in one and two variables, factoring, solving fractional equations, graphing, and verbal problem solving. (3 hours per week)

MAT 112 Intermediate Algebra (A,N,R) . . . . . 3 credit hours
Prerequisite: MAT 111 or equivalent
Introduction to sets, introduction to axiomatic approach to the set of real numbers, extension of exponents, radicals, first and second degree equations in one variable, functions, and graphs. (3 hours per week)

MAT 113 Introduction to Geometry (A,N,R). . . . . 3 credit hours
Prerequisite: MAT 112 or equivalent
Designed to extend the mathematical skills developed in MAT 111 and MAT 112. The topics to be included are logic, geometry, and basic trigonometry. (3 hours per week)

MAT 115 Consumer Mathematics (A,N,R) . . . 2 credit hours
Prerequisite: MAT 106 or equivalent skills
A course designed to help the student in his everyday dealing with the business world. Topics include loans, interest, checkbook reconciliation, and installment buying. (2 hours per week)

MAT 116 Exploring Mathematics (A,N). . . . . 3 credit hours
Prerequisite: MAT 106 or equivalent skills
A survey course designed to give the student an appreication of a great variety of interesting topics in mathematics without emphasizing its computational aspects. (3 hours per week)

MAT 117 Survey of Calculus (A,N,R) . . . . . 4 credit hours
Prerequisite: MAT 112
For Business, Life Science, and Social Science majors. Derivatives, integrals, and applications of them are included with attention restricted to algebraic, exponential, and logarithmic functions. (4 hours per week)

MAT 121 College Algebra (A,N,R). . . . . 4 credit hours
Prerequisite: MAT 112 or equivalent
Sets, operations on sets, an axiomatic approach to the set of real numbers, absolute value, inequalities, algebraic, exponential, and logarithmic functions, solving first and second degree equations and inequalities, graphs, solutions of systems of equations, sequences, permutations and combinations, and mathematical induction. (4 hours per week)

MAT 122 Trigonometry and Functions (A,N,R). . . . . 3 credit hours
Prerequisite: MAT 121 or equivalent
Topics include trigonometric functions, identities, graphs, logarithms, solutions of triangles, complex numbers, and polynomials. Functions as mappings, associations, and ordered pairs. Theory of equations and further solutions to systems of equations. (3 hours per week)

MAT 125 Statistics (A,N,R) . . . . . 3 credit hours
Prerequisite: MAT 111 or equivalent
Designed to provide an opportunity for the student to develop critical and functional understandings of statistical data. Attention is given to the basic concepts of statistical methodology and procedures. The principles of statistical investigation, technique and data presentation, measures of central tendencies, etc., are studied. (3 hours per week)

MAT 126 Computer Applications for Statistics (A,R) . . . . . 1 credit hour
Prerequisite: MAT 125 or concurrent enrollment in MAT 125
Laboratory course to include computer applications of statistical procedures such as correlation, chi square analysis, and analysis of variance. Data analysis will be done by using commercially prepared computer packages. (3 hours laboratory per week)

MAT 201 Calculus I (A,N,R). . . . . 5 credit hours
Prerequisite: MAT 122 or equivalent
Introduction to single variable calculus and analytic geometry. The concepts introduced will be motivated by geometric and physical interpretations. (5 hours per week)

MAT 202 Calculus II (A,N,R) . . . . . 5 credit hours
Prerequisite: MAT 201
Extension and further development of concepts of single variable calculus and analytic geometry studies in MAT 201. Applications of differentiation and integration; techniques of integration. (5 hours per week)

MAT 203 Calculus III (A,N,R) . . . . . 4 credit hours
Prerequisite: MAT 202
The completion of the traditional subject matter of single variable calculus not covered in MAT 201 and MAT 202. In this course, an introduction to vector analysis, multivariable calculus, and solid analytic geometry will be presented. Also covered are three-dimensional vector space and infinite series. (4 hours per week)

MAT 205 Ordinary Differential Equations (A,N,R) . . . . . 3 credit hours
This course will introduce the student to the formal study of differential equations. Topics will include differential equations of first order and first and higher degrees, linear differential equations and higher order equations, with applications. (3 hours per week)

MAT 299 Independent Study (A,N,R). . . . 1 to 3 credit hours
See course description on page 41.

PHYSICS

PHY 101 Fundamental Physics I (A,N,R) . . . . 3 credit hours
Prerequisite: MAT 101 or equivalent
An introduction to basic concepts in physics with an emphasis on applications. Primarily designed for occupational students and nonscience majors. (2 hours lecture and 3 hours laboratory per week)

PHY 102 Fundamental Physics II (A,N,R). . . . 3 credit hours
Prerequisite: MAT 102 or equivalent
Continuation of PHY 101. (2 hours lecture and 3 hours laboratory per week)

PHY 105 Topics in the Physical Sciences (A) . . . . . 3 credit hours
A nonmathematical course emphasizing topical subjects in the physical sciences. For students wishing to explore the concepts of the physical sciences. (2 hours lecture and 3 hours laboratory per week)

PHY 111 Applied Physics I (R) . . . . . 4 credit hours
Prerequisite: MAT 112
A laboratory based course in mechanics, heat, sound, electricity, and magnetism with emphasis on the application to technology. (3 hours lecture and 3 hours laboratory per week)

PHY 112 Applied Physics II (R) . . . . . 4 credit hours
Prerequisite: PHY 111
A continuation of PHY 111. (3 hours lecture and 3 hours laboratory per week)

PHY 115 Introduction to Medical Physics (A) . . . . . 4 credit hours
Prerequisite: MAT 121 or concurrent enrollment in MAT 121
Provides the physical theory pertinent to students of nuclear medicine and radiation therapy technology. Covers fundamentals of mechanics, electromagnetism, radiation, and atomic and nuclear theory. (3 hours lecture and 3 hours laboratory per week)

PHY 121 Principles of Electronics for Science Majors I (R) . . . . . 4 credit hours
Prerequisite: MAT 122 or concurrent enrollment in MAT 122 or consent of instructor
An introductory course in the principles of electronics and of the components used in modern electronic instrumentation. The student will become familiar with (1) basic test instruments, (2) the input-output characteristics of components and circuits, (3) assembly of components and circuits into electronic devices and instrumentation. Emphasis on components, basic circuits, and transducers. (3 hours lecture and 3 hours laboratory per week)

PHY 122 Principles of Electronics for Science Majors II (R). . . . . 4 credit hours
Prerequisite: PHY 121
Continuation of PHY 121 with emphasis on the use of analog and digital electronics in processing and control systems. (3 hours lecture and 3 hours laboratory per week)

PHY 125 Astronomy for the Layman (A,R) . . . . . 2 credit hours
Designed for nonscience majors as an introductory course in identification of constellations with telescopic studies of the moon, some planets, nebula, and other stellar objects. Other topics will include: mythology, origin of the universe and solar system, physical characterisitcs of the solar system, and photography through the telescope. Optional field trips included. (2 hours per week, no laboratory)

PHY 130 Introduction to Astronomy (N) . . . 4 credit hours
A nonmathematical introduction to the nature and structure of the universe. Class discussion will include current topics such as the lives of stars, the fate of the universe, and black holes. Each student will learn to recognize many stars and constellations. Opportunities will be provided for telescopic observation of the moon, planets, galaxies, and nebulas. (4 hours per week, no laboratory)

PHY 131 General Astronomy I (A,N,R) . . . . . 4 credit hours
Prerequisite: MAT 112 or consent of instructor
A study of the history and methods of astronomy and an introduction into our present understanding of the universe in terms of basic physical principles including the most recent discoveries and ideas such as quasars, pulsars, and black holes. (4 hours per week, no laboratory)

PHY 132 General Astronomy II (A,N,R) . . . . . 4 credit hours
Prerequisite: PHY 131
Continuation of PHY 131. (4 hours per week, no laboratory)

PHY 135 Special Topics in Astronomy (N) . . . . . 4 credit hours
Prerequisite: Consent of instructor
This course is designed for the serious amateur astronomer and has two main objectives: (1) help the student understand current writings on astronomy at the level of Scientific American or Sky and Telescope Magazine, (2) develop observational and photographic skills employing small telescopes. (4 hours per week, no laboratory)

PHY 141 Physics for Arts and Humanities I (A) . . . . . 3 credit hours
Prerequisite: High school algebra or consent of instructor
A study of the concepts, history, and philosophy of physics and its interaction with our culture. Topics include motion, force and energy, symmetry and form, structure of matter, relativity, and cosmology. Activities include discussions, demonstrations, films, and projects. (2 hours lecture and 3 hours laboratory per week)

PHY 142 Physics for Arts and Humanities II (A) . . . . . 3 credit hours
Prerequisite: High school algebra or consent of instructor
Continuation of PHY 141. (2 hours lecture and 3 hours laboratory per week)

PHY 151 General Physics I (A,N,R). . . . . 5 credit hours
Prerequisite: MAT 121 or consent of instructor
A noncalculus study of classical and modern physics. An elementary but thorough presentation of the fundamental principles of mechanics, heat, electromagnetism, relativity, and quantum mechanics, and the application of these principles on the micro and macro scale. (4 hours lecture and 3 hours laboratory per week)

PHY 152 General Physics II (A,N,R) . . . . . 5 credit hours
Prerequisite: PHY 151 or consent of instructor
Continuation of PHY 151. (4 hours lecture and 3 hours laboratory per week)

PHY 153 General Physics — Calculus Supplement I (N) . . . . . 3 credit hours
Prerequisite: MAT 201 and concurrent enrollment in PHY 151
Application of calculus to physical concepts discussed in PHY 151. (3 hours per week, no laboratory)

PHY 154 General Physics — Calculus Supplement II (N) . . . . . 3 credit hours
Prerequisite: PHY 153, MAT 202, and concurrent enrollment in PHY 152
Application of calculus to physical concepts discussed in PHY 152. (3 hours per week, no laboratory)

PHY 161 Physics for Scientists and Engineers I (A,R) . . . . . 5 credit hours
Corequisite: MAT 201
A calculus-based study of mechanics, heat, electricity and magnetism, and optics. (4 hours lecture and 3 hours laboratory per week)

PHY 162 Physics for Scientists and Engineers II (A,R) . . . . . 5 credit hours
Prerequisite: PHY 161 and concurrent enrollment in MAT 202
Continuation of PHY 161. (4 hours lecture and 3 hours laboratory per week)

PHY 201 Human Realities: Art, Science, Literature I (A) . . . . . 3 credit hours
An interdisciplinary, team-taught course using modular approach integrating studies in the humanities and the sciences to meet the diverse needs and interests of inner-city community college students. Students must also register for the humanities section of this course (3 hours per week, no laboratory)

PHY 202 Human Realities: Art, Science, Literature II (A) . . . . . 3 credit hours
A continuation of PHY 201. (3 hours per week, no laboratory)

PHY 205 Modern Physics (A,N,R) . . . . . 4 credit hours
Prerequisite: PHY 162
The principles of quantum mechanics and relativity applied to solid state, radiation, molecules, atoms, nuclei, and elementary particles. (4 hours per week, no laboratory)

PHY 206 Electricity and Magnetism (A,N,R) . . . . . 3 credit hours
Prerequisite: PHY 162 or consent of instructor
Theory of static and dynamic electricity and magnetism and electromagnetic radiation. (3 hours per week, no laboratory)

PHY 207 Optics (R) . . . . . 4 credit hours
Prerequisite: PHY 152 or consent of instructor
Theory of light: geometric and physical optics. (3 hours lecture and 3 hours laboratory per week)

PHY 208 Quantum Mechanics (A,N,R) . . . . . 3 credit hours
Prerequisite: PHY 162
A study of the basic foundations of quantum theory including the uncertainty principle, Schrodinger equation, probability waves, wave packets, and wave trains with applications to simple systems. (3 hours per week, no laboratory)

PHY 299 Independent Study (A,N,R) . . . . 1 to 3 credit hours
See course description on page 41.

SCIENCE

SCI 101 Science for Health Occupations I (A,N) . . . . . 4 credit hours
A one semester study of the structure and function of the human body. Emphasis is on the anatomy of the body systems. Includes some microbiology. (3 hours lecture and 2 hours laboratory per week)

SCI 102 Science for Health Occupations II (A,N) . . . . . 2 credit hours
Selected topics in metric measurements, chemistry, and physics which relate directly to the health occupations. (1 hour lecture and 2 hours laboratory per week)

SCI 105 The Metric System (A,N,R) . . . . . 1 credit hour
A comprehensive coverage of metric area, cubic volume, and capacity volume. Also included are conversions of English area, land area, cubic volume, capacity volume to metric units. Fahrenheit and Celsius temperatures and density and specific gravity are also included. (1 hour per week, no laboratory)

SCI 106 Science and the Preschool Child (A,N,R) . . . . . 2 credit hours
A course for the teacher or parent who desires an insight into the natural sciences and their meaning to the preschool child. It will provide the student with concepts and facts which a preschool child can grasp and with techniques which will stimulate a child's interest in the natural sciences. (2 hours per week, no laboratory)

SCI 111 Science for the Earth Citizen I (N) . . . . . 4 credit hours
This course is a general introduction to the scientific view of the world designed to help nonscience majors live and vote intelligently in a world shaped by science. Basic concepts in astronomy, biology, chemistry, geology, physics, and technology are studied in terms of words and pictures with no mathematics other than arithmetic being employed. (3 hours lecture and 3 hours laboratory per week)

SCI 112 Science for the Earth Citizen II (N) . . . . . 4 credit hours
Continuation of SCI 111. (3 hours lecture and 3 hours laboratory per week)

SCI 115 The Ascent of Man (N,R) . . . . . 2 credit hours
An overview of the many disciplines which have contributed to the knowledge of human origins, based upon the popular television series broadcast on BBC-TV. (2 hours per week, no laboratory)

SCI 116 Science and Science Fiction: A Changing Vision (A,N,R) . . . . . 3 credit hours
This course will deal with the major revolutionary developments in modern science and how science fiction literature views these developments including their impact on the values and goals of our society and the changing vision of the place of man in his universe. (3 hours per week, no laboratory)

SCI 201 Science for Health Occupations III (A,N) . . . . . 4 credit hours
Prerequisite: SCI 101 and SCI 102
An expansion of the topics covered in Science for Health Occupations I with emphasis on the physiology of the body systems, and physiological adaptations to stress and disease. (3 hours lecture and 2 hours laboratory per week)

SCI 202 Science for Health Occupations IV (A,N) . . . . . 3 credit hours
Prerequisite: SCI 101 and SCI 102
An introduction to microbiology related to infectious diseases and the body's defenses against infectious diseases. (2 hours lecture and 2 hours laboratory per week)

SCI 203 Science for Health Occupations V (A,N) . . . . . 1 to 3 credit hours
Prerequisite: Consent of instructor
Selected topics in health related concepts. (1 to 3 hours per week, no laboratory)

SCI 299 Independent Study (A,N,R) . . . . 1 to 3 credit hours
Students majoring in one of the areas of the Division of Science and Mathematics may enroll in independent study Intensive library and/or laboratory research on a specific topic under the direction of a qualified member of the division faculty. To be eligible, the student must have successfully completed one or more second year courses in the subject matter area in which he is majoring and give evidence that he can successfully engage in independent study. Independent study carries 1 to 3 hours credit involving a minimum of 3 to 9 hours per week. Permission to enroll must be obtained from the instructor under whose direction the independent study will be carried out and from the director of the division.

DIVISION OF SOCIAL SCIENCES
COURSE DESCRIPTIONS

Where a course description does not indicate the campus by the key A, N, or R, we would suggest you call the campus of your choice for information.

ANTHROPOLOGY

ANT 111 Principles of Anthropology (A,N,R) . 3 credit hours
An introductory study of the nature of culture and cultural evolution.

ANT 112 Principles of Anthropology (A,N,R) . 3 credit hours
An introductory study of culture including language, technology, social structure, arts and values.

ANT 119 Anthropology of Religion (A,N,R). . . 3 credit hours
An investigation of religion in preliterate and literate societies.

ANT 140 Contemporary American Culture (A,N,R) . . . . . 3 credit hours
An evaluation of contemporary American culture.

ANT 201 Physical Anthropology (A,N,R) . . . . 4 credit hours
An introductory study of the fossil record, living animals, and cultural factors as they relate to human evolution. May be taken for science credit for non-science majors.

ANT 202 Physical Anthropology (A,N,R) . . . . 4 credit hours
An anthropological study of human variation, human biology, and the mechanics of evolution. May be taken for science credit for non-science majors.

ANT 205 Anthropology of Women (A,N,R) . . . 3 credit hours
A cross-cultural investigation of female roles in pre-industrial and industrial societies.

ANT 206 Culture in the World Today: Latin America (A,R) . . . . . 3 credit hours
A view of cultural dynamics.

ANT 207 Culture in the World Today: The Middle East (A,R). . . . . 3 credit hours
A view of cultural dynamics.

ANT 208 Culture in the World Today: Africa (A,R). . . . . 3 credit hours
A view of cultural dynamics.

ANT 209 Principles of Archeology (A,N,R) . . . 3 credit hours
An introductory study of methods, techniques and theories of archeological investigation.

ANT 215 The Nature of Language (A,N). . . . . 3 credit hours
A survey of the basic structure, origin and development of Language.

ANT 216 Principles of Ethnology (A,N,R) . . . . 3 credit hours
A view of the methods and concepts which anthropologists use in studying non-industrialized cultures.

ANT 225 Current Topics in Anthropology (A,N,R). . . . . 3 credit hours
Prerequisite: 6 hours of Anthropology
An analysis of topics of anthropological interest varying from term to term.

ANT 230 Ethnography of the North American Indian (A,N) . . . . . 3 credit hours
Focuses upon the indigenous Indian cultures of North America.

ECONOMICS

ECO 107 Consumer Economics (A,N,R) . . . . . 3 credit hours
Deals with consumer effectiveness, in areas such as money management, credit, taxes, and consumer law.

ECO 117 Introduction to Economics (A,N,R) . . . . . 3 credit hours
Emphasizes development of economic systems and philosophies; applications of fundamental economic concepts.

ECO 118 Labor Relations (A,N,R). . . . . 3 credit hours
An in-depth analysis of labor economics, collective bargaining, labor law, and the role of government in labor relations.

ECO 119 Applied Economics (A,N,R) . . . . . 3 credit hours
Emphasizes basic economics that relate to the role of the small businessman and the wage earner.

ECO 121 Labor-Management Relations I (N) . . . . . 3 credit hours
The role of the union steward and first-line supervisor in the labor-management relationship.

ECO 122 Labor-Management Relations II (N) . . . . . 3 credit hours
The role of the union steward and first-line supervisor in preparation for negotiations; a simulated exercise in bargaining a labor contract with union and management teams.

ECO 165 Economics and the Chicano (A) . . . . 3 credit hours
Deals with the contributions of the Chicano to the American economic system. The economic activities in which the Chicano is presently engaged will be examined.

ECO 175 Government and the U.S. Economy (A,R) . . . . . 3 credit hours
Deals with development of government's role in the national economy.

ECO 211 Principles of Economics — Micro (A,N,R) . . . . . 3 credit hours
Presents an analysis of the market system: Consumers, businesses, and markets.

ECO 212 Principles of Economics — Macro (A,N,R) . . . . . 3 credit hours
Present an overview of gross national product, government involvement, money and banking, national income determination, inflation and unemployment, business cycle fluctuations, and international trade.

ECO 265 Black Economic Development (A) . . . . . 3 credit hours
Analyzes the nature of urban growth, economic instability, income inequality, urban public services, public revenues, and the different problems of unemployment, poverty, and manpower development.

ECO 285 Dynamics of Economics (A,N,R) 1 to 3 credit hours
Focuses upon a topical approach to contemporary economic issues.

GEOGRAPHY

The geography offerings are composed of courses which may be used for science and social science credit both at CCD and for transfer to other colleges. Consult with the geography faculty for additional information.

GEO 105 Fundamental Place-Name Geography (A,N,R). . . . . 1 credit hour
Designed for persons wanting to know where places are located.

GEO 106 Visual Literacy (A,N,R) . . . . . 1 credit hour
Designed to acquaint students with techniques for increasing their visual awareness and understanding.

GEO 107 Applied Geography (A,N,R) . . . . . 1 credit hour
Designed for the student who wants to know how informed locational decisions related to residential location, marketing geography, and manpower geography are made.

GEO 108 Maps and Compass Use (A,N,R) . . . . 1 credit hour
Designed to improve the student's ability to make and use maps.

GEO 111 Physical Geography (Weather and Climate) (A,N,R) . . . . 4 credit hours
Introduction to the principles of landforms and soils as major aspects of man's natural environment.

GEO 112 Physical Geography (Landforms) (A,N,R). . . . . 4 credit hours
A general introduction to the principles of meteorology, climatology, world vegetation patterns, and world regional climatic classification.

GEO 121 Geography of Man (A,N,R) . . . . . 3 credit hours
An introduction to the patterns and forms of mankind's changing use of and adjustments to the earth's environments.

GEO 122 Geography of Man (A,N,R) . . . . . 3 credit hours
A preliminary examination of major global social, economic, and political problems from a spatial, geographic perspective.

GEO 150 World Regional Geography (A,N,R). . . . . 4 credit hours
An introduction to the major regions of the world and to the concepts of cultural geography.

GEO 165 Geography of Latin America (A,N,). . . . . 3 credit hours
An indepth analysis of geographical patterns of Latin America.

GEO 200 Human Ecology (A,N,R) . . . . . 3 credit hours
A survey of world resources, the nature of resources, attitudes toward resources, environmental principles, and the impact of populations on resource bases.

GEO 210 The Geography of Economic Activity (A,N,R) . . . . . 3 credit hours
An examination of man's economic activities and their location.

GEO 220 The Many Colorados (A,N,R) . . . . . 3 credit hours
Examines such things as the landforms, vegetation, climate, peoples, economy, and culture which gives various areas of Colorado their character.

GEO 230 Urban Geography (A,N,R) . . . . . 3 credit hours
The study of sociological, psychological, and economic forces at work in urban places from a spatial, geographic perspective.

GEO 235 Rural Geography (A,N). . . . . 3 credit hours
An examination of the changing patterns of land use and population in rural America resulting from both agricultural and non-agricultural forces since World War II and the effects of these changes on rural America.

GEO 289 Geography Practicum (A,N,R) . 1 to 9 credit hours
Field experience related to the student's interests. Arrangement with instructor required.

HISTORY

HIS 111 World Civilization (A,N,R) . . . . . 4 credit hours
Explores the historical and cultural development of peoples in various areas of the world.

HIS 112 World Civilization (A,N,R) . . . . . 4 credit hours
Explores the historical and cultural development of peoples in various areas of the world with greater emphasis on the modern period.

HIS 115 Personalities and Issues (A,N,R) . . . 3 credit hours
Examines the personalities and issues that have shaped history.

HIS 116 The Native American Experience and Indian History (A,N) . . . . . 3 credit hours
An introduction to American Indians historical and socio-cultural development with emphasis upon those processes and relations with non-Indians, which have contributed to the current conditions.

HIS 130 The Southwest United States (A,N,R) . . . . . 3 credit hours
The culture and historical development of what is now the Southwestern United States, including the cultural contributions of the American Indian and Chicano people.

HIS 135 Introduction to Latin American History (A). . . . . 3 credit hours
Provides an introduction to the land, people, and politics from a historical perspective and Third World approach.

HIS 136 Historia de Latino America (A) . . . . . 3 credit hours
Una presentacion de la historia de Latino-America hecho principalmente en espanol y con enfasis tambien en los temas contemporaneas.

HIS 140 Caribbean Culture and the Cuban Revolution (A). . . . . 3 credit hours
Will investigate the cultural aspects of life in the West Indies with emphasis on the Cuban Revolution from 1960 to the present.

HIS 150 Contemporary World History (A,N,R) . . . . . 3 credit hours
Analyzes the history and culture of modern man since 1900.

HIS 205 Women in History (A,N,R) . . . . . 3 credit hours
Surveys the roles, experiences, and contributions of women in the history of the Americas; explores ways in which womens history modifies traditional interpretations of historical events.

HIS 211 The United States to 1865 (A,N,R). . . . . 3 credit hours
Story of the American people from the first inhabitants, through the European Colonies, the American Revolution, and the early experiences of the new nation through the crisis of Civil War.

HIS 212 The United States 1865 to Present (A,N,R) . . . . 3 credit hours
Story of the people of the U.S. from reconstruction through the resettlement of the west, the emergence of the Modern Industrial State, World War, the Roaring Twenties, and the Great Depression, to the upheavals since World War II.

HIS 218 The Civil War and Reconstruction (N,R) . . . . . 3 credit hours
Designed to expose the student to the causes of the Civil War, the way it was fought, and the attempts to reconstruct the South in the aftermath of war. Special focus upon Lincoln, Black men in America, and the idea of the confederacy.

HIS 220 Colorado History (A,N,R). . . . . 3 credit hours
The story of the people, society and culture of Colorado from its earliest settlers, the Indians, through the Spanish influx, the Fur Traders, the explorers, the Gold Rush, the cattlemen and farmers, the tourists and the modern 20th Century state.

HIS 225 Colorado Seminar (N,R). . . . . 3 credit hours
On-site seminar with visits to local places of historical significance, such as Fort Vasquez, Cripple Creek, and Georgetown. Examines the dynamics of mining, labor, farming and ranching, and Colorado's people.

HIS 226 The Greater Denver Area (A,N,R). . . . . 3 credit hours
On-site history of the development of the greater Denver area. Designed to give the student an overall and indepth view of the local culture, heritage and character.

HIS 228 The Black People and the American Frontier (A,N) . . . . . 3 credit hours
Examines the roles of Black people in the development of the West.

HIS 235 The American West (A,N,R). . . . . 3 credit hours
Focuses upon Indians, Fur Traders, explorations, gold rushes, cattlemen, sodbusters, closing of the frontier, and developments in the 20th Century.

HIS 239 American Presidents (A,N,R). . . . . 3 credit hours
Gives the student an opportunity to analyze some of the critical problems facing our American Presidents, from George Washington to the present.

HIS 241 Black Civilization — Africa (A) . . . . . 3 credit hours
Traces the culture and development of early African Civilization to the American Civil War.

HIS 242 Black Civilization — America (A). . . . . 3 credit hours
The culture and the development of Blacks in America from the Civil War to the present time. Treats reconstruction and the basic problems which have emerged both in the South and North with emphasis on the protest movements emerging in the 20th Century.

HIS 243 Land Grants and Their Relationship to the Contemporary Chicano I (A) . . . . . 3 credit hours
Provides the student with information concerning the Spanish and Indian Pueblo Land Grants of the Southwest from 1689-1848.

HIS 244 Land Grants and Their Relationship to the Contemporary Chicano II (A). . . . . 3 credit hours
Covers changes of land grants status made after the conquest of the Southwest by the United States 1848 to the present emphasis on contemporary issues.

HIS 246 Mexico (R). . . . . 3 credit hours
The historical and cultural development of Mexico from earliest times to the present; includes an examination of present day politics and society of Mexico.

HIS 250 Democratic Ideas (A,R) . . . . . 3 credit hours
Study of individual and social freedom as a value and concern in the western world.

HIS 255 Soviet Russia (A,R) . . . . . 3 credit hours
An analysis of the men and ideas that shaped the development of the Soviet Union.

HIS 261 England I (R) . . . . . 3 credit hours
Deals with the formative development of England from Stone Henge to the restoration of the monarchy in 1660.

HIS 262 England II (R) . . . . . 3 credit hours
Study of the political, social, and economic forces in England from 1660 to the present.

HIS 271 Middle America (MESO) (A,N) . . . . . 3 credit hours
Traces the history of the indigenous population of Middle America (Mexico, Guatemala) from earliest times until the conquest of Mexico by the Spanish, Emphasis is on the civilizations of the Olmeca, Zapoteca, Maya, Tolteca, Mixteca, and Azteca.

HIS 272 Middle America (MESO) (A,N) . . . . . 3 credit hours
Presents the history of Middle America after the arrival of the Europeans until the present times.

HIS 280 No More Lies: The Other Side of American History (A) . . . . . 3 credit hours
Features a "revisionist" approach to American history; the purpose is to develop an objective understanding of America's history — of its dark side as well as its greatness.

STUDENTS MUST ARRANGE WITH INSTRUCTOR FOR ENROLLMENT IN HIS 285, HIS 286, HIS 287, HIS 288, HIS 289.

HIS 285 Internship in a History Museum: General Introduction (N,R) . . . . . 3 credit hours
Work in a local history museum involving duties designed to familiarize them with functions of a history museum.

HIS 286 Internship in a History Museum: Library Resources (N,R) . . . . . 3 credit hours
Work in the library resources are of the State Historical Society.

HIS 287 Internship in a History Museum: Building and Sites (N,R) . . . . . 3 credit hours
Performs a variety of tasks for the buildings and sites department of the State Historical Society including research on historical sites.

HIS 288 Internship in A History Museum: Education (N,R) . . . . . 3 credit hours
Work in the education department of the State Historical Society.

HIS 289 Internship in a History Museum: Collections (N,R) . . . . . 3 credit hours
Work in the collections department of the State Historical Society.

PHILOSOPHY

PHI 111 Introduction to Philosophy (A,N,R) . . . . . 3 credit hours
A study of the significant questions of the human enterprise with consideration given to human nature and existence, theories of knowledge and reality, freedom, the good life, and religion.

PHI 115 Social and Political Philosophy (A,N,R) . . . . . 3 credit hours
Examines the arguments, values, and ideas man uses to explain, criticize and change his society and culture.

PHI 121 Eastern Philosophies . . . . . 3 credit hours
An analysis of the great religions of the Far East; includes Hinduism, Buddhisim, Confucianism, and Taoism.

PHI 122 Western Philosophies . . . . . 3 credit hours
An analysis of the religions of the Middle East and Western Civilization, includes Judaism, Christianity, and Islam.

PHI 125 Indigenismo and the Chicano (A). . . . . 3 credit hours
A refreshing change of pace for the student interested in a non-european approach to the often forgotten philosophies and ideas of native peoples in the Americas which have affected the Chicano. Cross reference with HUM 127. Can be accepted as Philosophy or Humanities credit.

PHI 221 Ethics and Values (A,N,R) . . . . . 3 credit hours
A comprehensive consideration of the "the good life" of the knowledge and values that can be used in the endeavor to master the problems and possibilities of the contemporary human situation.

PHI 222 Contemporary Moral Issues (A,N,R) 3 credit hours
Ethical and value considerations of vital current moral issues.

PHI 230 Logic (A,N,R) . . . . . 3 credit hours
The principles of logic applied to the problems and realities encountered in the practical realms of daily life.

PHI 240 Progressive Thinking and the Contemporary Chicano (A) . . . . 3 credit hours
An analysis of the development of the Philosophy of the Chicano.

PHI 245 American Philosophy (A,N,R) . . . . . 3 credit hours
The development of the American Philosophical thought.

PHI 260 Philosophies of Education (A) . . . . . 3 credit hours
Examines the philosophical role of education in society.

POLITICAL SCIENCE

POS 111 Introduction to Political Science (A,N,R) . . . . . 4 credit hours
Studies man as a political animal; the nature and use of power; the role of ideology.

POS 121 American National Government (A,N,R) . . . . . 3 credit hours
Study of American government emphasis on the role of institutions, individuals, and groups of informing American political behavior.

POS 122 American State and Local Government (A,N,R). . . . . 3 credit hours
Analysis of governmental structure and political behavior in states and municipalities; urban problems and the role of government in their solution.

POS 161 Political Leadership (A,N,R) . . . . . 3 credit hours
A study of group process, parliamentary procedures, recruiting, campaigning, publicity, legislation, and administration through classroom and laboratory experience.

POS 162 Practical Politics (A,N,R) . . . . . 3 credit hours
Introduction to political action at the local, state and/or national level.

POS 201 Comparative Politics (A,N,R). . . . . 3 credit hours
Introductory survey and analysis of political behavior and institutions in the 20th Century; problems of the "over developed" and "under developed" world.

POS 205 International Relations (A,N,R) . . . . 3 credit hours
The international political system and the effects of geography, history, culture, ideology, domestic politics, foreign policies, diplomacy, international law, and international organizations.

POS 206 Current Political Issues (A,N,R). . . . 3 credit hours
A General overview of federal relationships with the various tribes and the Indian population.

POS 215 Federal Indian Policies (A) . . . . . 3 credit hours
Studies local, state, national and international political events and developments.

POS 230 Chicano and the Law (A,N) . . . . . 3 credit hours
Provides an insight into all phases of the jurisprudence system both Civil and Criminal.

POS 246 Women, Power, and Politics (A,N,R) . . . . . 3 credit hours
Designed to reach the process of political activism to persons interested in changing discrimination activities against women.

POS 247 Colorado Politics (A,N,R) . . . . . 3 credit hours
The agents, both individuals and organizations, and processes responsible for major social, political, economic, and planning decisions in Colorado.

POS 251 Chicano Political Experience (A) . . . 3 credit hours
A critical evaluation of leading issues affecting Chicanos in American society.

POS 253 Third World Policies and the Chicano (A) . . . . . 3 credit hours
Provides a realistic look at the Chicano in relationships to the developing nations presently known as "Third World" countries.

POS 254 Chicano Legislative Review (A) . . . . 3 credit hours
A critical evaluation of leading issues effecting Chicanos in the legislative process. Includes a practicum which involves a follow-through of bills selected by the students. (Course offered when the State Legislature is in process)

POS 265 Black Political Thought and Experience (A,N). . . . . 3 credit hours
A critical analysis and evaluation of the development of Black political thought and the reciprocal impact of political institutions and organizations upon Blacks in America.

POS 285 Dynamics of Political Science (A,N,R). . . . . 1 to 4 credit hours
Deals with political forces affecting community development in urban and/or rural environments. Emphasizes problem solving through the use of the tools of political science. Arrangements with instructor required.

PSYCHOLOGY

PSY 100 Human Relations in Business and Industry (A,N,R) . . . . 3 credit hours
Focuses on the personal problems encountered by employees in a business relationship with fellow employees and with the employer.

PSY 105 Self-Exploration and Understanding (R) . . . . . 1 to 3 credit hours
This is an intensive growth experience offering the opportunity for students to explore their identity, feelings, unfinished relationships and the making of new relationships.

PSY 106 Human Potential Seminar (R) . . . . . 3 credit hours
Uses James McHolland's Human Potential Workbook following his structure dealing with subjects of self-affirmation, self-motivation, determination and emphathy for others.

PSY 111 General Psychology (A,N,R) . . . . . 3-4 credit hours
A broad overview of general field and fundamental principles of Psychology. (It is recommended that PSY 111 and PSY 112 be taken in sequence.) General Psychology Lab offered at Auraria and North Campuses for one (1) credit hour.

PSY 112 General Psychology (A,N,R) . . . . . 3-4 credit hours
Continuation of PSY 111. (It is recommended that PSY 111 and PSY 112 be taken in sequence.) General Psychology lab offered at Auraria and North Campuses for one (1) credit hour.

PSY 115 Psychology of Personal Adjustment (A,N,R) . . . . . 3 credit hours
Psychological principles as they relate to individuals in the areas of social interaction and personal adjustment.

PSY 125 Child Guidance Techniques (A,N,R) 3 credit hours
A study of methods and techniques of working with children.

PSY 126 Psychology of Law Enforcement (R). . . . . 3 credit hours
Deals with the psychological effects of policing on the officer and the public.

PSY 205 Psychology of Women (A,N,R) . . . . . 3 credit hours
The psychological assumptions about the female personality and how these assumptions are being questioned or verified by recent studies and cultural change.

PSY 210 Social Psychology (A,N,R) . . . . . 3 credit hours
Social factors which influence the behavior of individuals as they interact with others.

PSY 211 Introduction to Human Resources Development (A,N,R). . . 3 credit hours
This course integrates knowledge and theories from a variety of behavioral sciences. This course is not intended to develop analysts or therapists, but rather is designed to sensitize the student to the issues and development of human resources.

PSY 212 Introduction to Human Resources Development (A,N,R). . . 3 credit hours
Examines in depth the contemporary phenomenon of complex human behavior. Emphasis will be in the area of group dynamics, communication processes, group problem-solving, and group growth.

PSY 215 Psychology of Human Sexuality (A,N,R) . . . . . 3 credit hours
Covers topics dealing with the psychological, sociological, biological implications of human sexuality.

PSY 218 The Mental Health Aspects of Sports, Exercise, and Recreation (A) . . . . . 3 credit hours
A humanistic approach to the value of sports, exercise, and recreation as a means of self-fulfillment.

PSY 221 Child Development (A,N,R) . . . . . 3 credit hours
Studies the physical, emotional, social, and intellectual development of the child.

PSY 222 Developmental Psychology (A,N,R). 3 credit hours
Studies the physical, emotional, social, and intellectual development from late middle years to adulthood.

PSY 225 Psychology of Death and Dying (A,N,R) . . . . . 3 credit hours
Deals with the social and psychological aspects of death and dying.

PSY 226 Coping With Stress, Crisis and Dying (A) . . . . . 3 credit hours
Designed to look at the areas of crisis intervention, altered body image, and death and dying.

PSY 230 Abnormal Psychology (A,N,R) . . . . . 3 credit hours
Prerequisite: PSY 111 and PSY 112 or arrangement with instructor.
Description, and theories of personality and behavior disorders.

PSY 235 Psychology of Human Growth and Development (A,N,R) . . . . . 3 credit hours
Studies of childhood to senescence. Designed primarily for health occupations.

PSY 247 Behavioral Modification (R) . . . . . 3 credit hours
Studies theory, principles, and applications of behavioral modification.

PSY 250 Psychology of Prejudice (A,N,R) . . . 3 credit hours
Designed to assist students so that they understand in depth the basic causes of prejudice and the etiology of prejudical behavior.

PSY 255 Psychological Development of the Black Personality (A) . . . . . 3 credit hours
An indepth study into the psychological factors of racism that influence the development of the Black personality.

PSY 260 Psychology of the Chicano (A,N) . . . . . 3 credit hours
Designed to develop an understanding of the psychological impact of the Chicano experience on the Chicano personality.

PSY 265 Social Psychology of the Native American (A). . . . . 3 credit hours
Presents a view of the Native American personality in relation to the modern environment on the United States, from the Native American perspective.

PSY 266 Chicano Community Mental Health (A) . . . . . 3 credit hours
Deals with the individual and family mental health of the Chicano community.

PSY 270 Industrial Psychology (A,R) . . . . . 3 credit hours
Presents the psychological principles of employee selection, training, testing, evaluation, human motivation, job satisfaction, work efficiency, fatigue, and human engineering.

PSY 275 Psychology of Management . . . . . 3 credit hours
Concepts of Human Behavior that are relevant to organizational and managerial problems.

PSY 285 Dynamics of Psychology (R). . . . . 1 to 3 credit hours
A study of patterns of human behavior in problem-solving and decision-making.

PSY 297 Introduction to Human Services (R) . . . . . 6 credit hours
Students will participate in a series of workshops emphasizing crisis intervention, psycho-therapeutic techniques and related communication processes. Students will work in a social service agency or institution.

SOCIOLOGY

SOC 111 Introduction to Sociology (A,N,R) . . . . . 3 credit hours
Deals with the basic concepts and principles of sociology that pertains to the individual in society.

SOC 112 Introduction to Sociology (A,N,R) . . . . . 3 credit hours
Deals with the basic patterns of sociology that shape society.

SOC 115 The Athlete and Sports in Society (A,N,R). . . . . 3 credit hours
The study of sociological issues through such topics as violence, competition, the value of participation, the changing role of women, and sports as a vocation.

SOC 140 Sociology of Mental Health (A,R) . . . . . 3 credit hours
An investigation into socio-psychological factors of mental health.

SOC 150 Marriage and the Family (A,N,R) . . . . . 3 credit hours
Develops an understanding of the social role of marriage and family living, of those factors which promote stable marital relations.

SOC 156 Sociology of Women: Selected Topics (A,N,R) . . . . . **3 credit hours**
Interdisciplinary study of women — past and present, provides a perspective for research and understanding of changing roles of women in various levels of society.

SOC 165 Movimiento Estudiantil Chicano de Aztlan (A) . . . . . **3 credit hours**
Designed to acquaint Chicano and Bilingual students with general college information and educate them in the area of academic planning.

SOC 200 Urban Sociology (A,N,R) . . . . . **3 credit hours**
City and metropolitan growth are examined in terms of the human factors and social issues involved.

SOC 205 Industrial Sociology (A,N) . . . . . **3 credit hours**
Studies problems and benefits of an industrial system for the individual and society; alternative industrial structures; and the relationships to different economic and political systems.

SOC 206 The 21st Century: Models of Future Worlds (A,R) . . . . . **3 credit hours**
An interdisciplinary examination of possible futures for human beings, their physical environment, and their social institutions.

SOC 210 La Familia Chicana (A) . . . . . **3 credit hours**
Designed to provide insights into the structure and traditions of the Chicano family as compared and contrasted with other America family structures.

SOC 215 Current Social Problems (A,N,R) . . . . . **3 credit hours**
Introductory considerations of some major current social issues designed to improve the student's ability to understand and systematically investigate concerns vital to everyday life.

SOC 217 Social Stratification (A,N,R) . . . . . **3 credit hours**
Critical examination and evaluation of major theories of class and distribution of power, prestige and wealth, the relationship between class and personality.

SOC 218 Sociology of Poverty (A) . . . . . **3 credit hours**
A cross cultural study of poverty in today's societies. Comparative description of poverty in Latin America, Asia, and Africa. Also, study of the cultural, political and economic aspects of poverty in the United States.

SOC 219 Sociology of Conflict (A) . . . . . **3 credit hours**
Examines the stages and functions of conflicts within society and social groups such as community organizations, religious systems, economic institutions, educational institutions, and political structures.

SOC 220 Minority Groups on American Society (A,N,R) . . . . . **3 credit hours**
The processes and consequences of labeling whereby certain groups come to be defined as "minorities" and treated in particular ways are studied.

SOC 225 Deviant Behavior (A,R) . . . . . **3 credit hours**
Sociological perspectives on behavior defined as deviant, abnormal, or socially unacceptable.

SOC 226 Aging and the Aged (A,N,R) . . . . . **3 credit hours**
Cultural alternatives of viewing the aging process and treatment of the aged studied from sociological, psychological, and political perspectives.

SOC 227 Social Change (A) . . . . . **3 credit hours**
Factors and determinants of continuity and analysis of leading theories of social change in technologically developed and underdeveloped societies against the historical background of their times.

SOC 228 Sociology of Education (A) . . . . . **3 credit hours**
The study of educational processes in relation to contemporary society. Cultural forces and institutions helping to shape education and some resulting issues and problems.

SOC 229 Education in Urban America (A) . . . . . **3 credit hours**
The study of factors that affect teaching-learning of inner-city children. This course includes subjects such as: Poverty, discrimination, prejudice, and racism in the United States and their impacts on teaching-learning processes.

SOC 230 Sociology of the Chicano Community (A) . . . . . **3 credit hours**
Fundamental concepts and theories of sociology with comparative emphasis on the Chicano and his culture in America.

SOC 235 Sociology of Religion (A) . . . . . **3 credit hours**
Concepts related to the field of religion as it applies to the organization of society, and cognitive construction of truth by man be ngs

SOC 236 The Chicano and the Schools (A) . . . . . **3 credit hours**
Studies problems of Chicano students adapting to the schools and the teacher's response to them.

SOC 237 Urbanization and the Chicano (A) . . . . . **3 credit hours**
Studies rural folk values of the Chicano and their erosion in the urban setting.

SOC 238 Field Work in Barrio Studies (A) . . . . . **3 credit hours**
Observation of selected barrios, institutions, and agencies to be conducted under supervision and after preparatory instruction to acquaint students with the barrio.

SOC 239 Political Sociology (A) . . . . . **3 credit hours**
A sociological analysis of the state as a social organization, the nature of political systems and political behavior in a societal context, and of the interrelationships of political and societal phenomena.

SOC 241 Sociology of the Black Community I (A) . . . . . **3 credit hours**
Fundamental concepts and theories of sociology are related to Black people, their culture, and contributions to America.

SOC 242 Sociology of the Black Community II (A) . . . . . **3 credit hours**
Presents the problems and characteristics of Black communities in relation to various agencies and institutions operating within them.

SOC 246 La Mujer Politica (A,N) . . . . . **3 credit hours**
Delves into the traditional and contemporary roles of La Chicana.

SOC 248 Peoples and Cultures of the Middle East (A). . . . . 3 credit horus
Includes a discussion of the fundamental aspects of the Middle Eastern societies covering such topics as impacts of physical environment on development of cultures, contemporary demographic characteristics and problems, overall examination of major institutions (economic, family, political, educational, and religious).

SOC 255 Criminology (A.N.R.) . . . . . 3 credit hours
Designed to study the nature and causes of crime as a social phenomenon.

SOC 256 Juvenile Delinquency (A,N,R) . . . . . 3 credit hours
Theories of the causes and prevention of delinquency.

SOC 257 Correction, Treatment, and Custody (A) . . . . . 3 credit hours
Examination of principles and problems of controlling and treating offenders.

SOC 258 Field Practicum in Corrections (A) . . . . . 3 to 5 credit hours
Prerequisite: 3 required courses in corrections and by arrangement with the instructor.
Students will work with community organizations, programs and agencies and study the application of treatment of offenders in order to aid the student in developing the perspectives, skills, and methods vital in corrections.

SOC 260 Divorce and Other Unmarried Lifestyles (A,N,R). . . . . 3 credit hours
Develops an understanding of the causes of divorce and the problems of adjustment to it; the single life, the one-parent household, the arrangement, swinging, communes, and other unmarried lifestyles.

SOC 266 The Contemporary Native American (A). . . . . 3 credit hours
An intensive survey of the contemporary problems, issues and developments involving American Indians, both urban and rural.

SOC 267 The Native American in Urban America (A) . . . . . 3 credit hours
A study of the historical development of Native American communities within urban areas and an analysis of what it means to be an "urban Indian" in modern America.

SOC 285 Dynamics of Sociology (A,N,R) . 1 to 3 credit hours
Focuses on selected areas of sociological investigation to be announced in each semester's schedule.

SOCIAL SCIENCE

SOS 101 Field Experience in Community Organizations I (A,N,R) 3 credit hours
Students will perform human service work in community organizations, programs, and agencies of their choice. Arrangement with instructor required. (1 hour of lecture and 4 to 6 hours of field experience per week)

SOS 102 Field Experience in Community Organizations II (A,N,R) 3 credit hours
Continuation of Field Experience I. Arrangement with instructor required. (1 hour of lecture and 4 to 6 hours of field experience per week)

SOS 115 Introduction to Social Science (R). . . . . 3 credit hours
Surveys various social science disciplines in terms of basic concepts and methodology.

SOS 211 Introduction to Community Development (A,N,R,) . 3 credit hours
The Current theories of planned social change will be surveyed, along with their practical application in numerous community settings by various social change agents.

SOS 212 Techniques in Community Development (A,N,R) . . 3 credit hours
From the conceptual foundations established in SOS 211, the students will delve deeper into planned social change by taking the position of change agents.

The classroom style will be identical to SOS 211.

SOS 216 The Urban Setting: Metro Denver (A,N,R) . . . . . 3 credit hours
Metro Denver will be used as a comparative case study in American urban areas.

The classroom style will be identical to SOS 211.

SOS 260 Research Methods in the Social Sciences (A,N,R) . . . . . 3 credit hours
Designed to aid the student to develop the skills, methods, and techniques of research required for systematically exploring the socio-psychological world in which he lives.

SOS 261 Research Methods in Community Development (A,N,R) . . 3 credit hours
The various data gathering methods, approaches to analysis of data, and the evaluation of their use for community development purposes.

INDEPENDENT STUDY

299 Independent Study (A,N,R) . . . . . 1 to 3 credits
Prerequisite: Permission of the Division Director and arrangement with instructor.
Provides opportunity for the student to engage in intensive study and research on a specific topic under the direction of a qualified faculty member.

This course will not transfer.

CONSORTIUM OF ETHNIC STUDIES

COURSE DESCRIPTIONS

Where a course description does not indicate the campus by the key, A, N, or R, we would suggest you call the campus of your choice for information.

ANTHROPOLOGY

ANT 230 Ethnography of the North American Indian (A) . . . . . 3 credit hours
Focuses upon the Indigenous Indian cultures of North America.

ART

ART 195 The Art of Africa and Black Americans (A) . . . . . 3 credit hours
A critical examination of the Art of Africa and its relationship to the artistic development of the New World.

ART 196 Chicano Art History (A) . . . . . 3 credit hours
A basic course in art appreciation designed to provide historical background in Chicano art.

ART 197 Native American Arts and Contemporary Development (A) . . . 3 credit hours
The history of Native American art with emphasis on painting, sculpture, and crafts.

ART 295 Chicano Mural Painting (A) . . . . . 3 credit hours
Prerequisite: ART 103 and ART 107 or arrangement with instructor.
Study in a variety of approaches to mural painting including fresco, secco, and relief. Emphasis on contemporary Chicano subjects.

DRAMA

DRA 131 Practicum in Teatro I (A) . . . . . 3 credit hours
Building upon the precedent of current Chicano "teatro", students will establish their own techniques of acting, directing, and playwriting.

DRA 132 Practicum in Teatro II (A). . . . . 3 credit hours
Continuation of Teatro I.

ECONOMICS

ECO 165 Economics and the Chicano (A). . . . . 3 credit hours
Deals with the contributions of the Chicano to the American economic system. The economic activities in which the contemporary Chicano is presently engaged will be examined.

ECO 265 Black Economic Development (A) . . . . . 3 credit hours
Analyzes the nature of urban growth, economic instability, income inequality, urban public services, public revenues, and the different problems of unemployment, poverty, and manpower development.

ENGLISH

ENG 109 Barriology Communications (A). . . . 3 credit hours
A study of networks and modes of communication utilized in the Chicano community, including communication between the people and different public agencies which serve them. Basic communication theory will be examined and applied to communications channels in the barrio.

HISTORY

HIS 116 The Native American Experience and Indian History (A,N) . . . . . 3 credit hours
An introduction to American Indian historical and socio-cultural development with emphasis upon those processes and relations with non-Indians, which have contributed to the current conditions.

HIS 130 The Southwest United States (A,N,R) . . . . . 3 credit hours
The culture and historical development of what is now the Southwestern United States, including the cultural contributions of the American Indian and Chicano people.

HIS 135 Introduction to Latin American History (A). . . . . 3 credit hours
Provides an introduction to the land, people, and politics of Latin America from a historical perspective and a Third World approach.

HIS 136 Historia de Latino America (A) . . . . . 3 credit hours
Una presentacion de la historia de Latino-America Hecho principalmente en espanol y con enfasis tambien en los temas contemporaneas.

HIS 140 Carribbean Culture and the Cuban Revolution (a) . . . . . 3 credit hrs.
Will investigate the cultural aspects of life in the West Indies with emphasis on the Cuban Revolution from 1960 to the Present.

HIS 228 The Black People and the American Frontier (A,N) . . . . . 3 credit hours
Examines the role of Black people in the development of the West.

HIS 241 Black Civilization — Africa (A) . . . . . 3 credit hours
Traces the culture and development of early African Civilization to the American Civil War.

HIS 242 Black Civilization — Africa (A) . . . . . 3 credit hours
The culture and the development of Blacks in America from the Civil War to the present time. Treats Reconstruction and the basis problems which have emerged in the South and North with emphasis on the protest movements emerging in the 20th Century.

HIS 243 Land Grants and Their Relationship to the Contemporary Chicano 1 (A) . . . . . 3 credit hours
Provides the student with information concerning the Spanish and Indian Pueblo Land Grants of the Southwest from 1689-1848.

HIS 244 Land Grants and Their Relationship to the Contemporary Chicano II (A) . . . . . 3 credit hours
Covers changes of land grants status made after the conquest of the Southwest by the United States 1848 to the present with emphasis on contemporary issues.

HIS 246 Mexico (R). . . . . 3 credit hours
The historical and cultural development of Mexico from earliest times to the present; includes an examination of present day politics and society of Mexico.

HIS 271 Middle America (MESO) A,N). . . . . 3 credit hours
Traces the history of the indigenous population of Middle America (Mexico, Guatemale) from earliest times until the conquest of Mexico by the Spanish. Emphasis is on the civilizations of the Olmeca, Zapoteca, Maya, Tolteca, Mixteca, and Azteca.

HIS 272 Middle America (MESO) (A,N) . . . . . 3 credit hours
Presents the history of Middle America after the arrival of the Europeans until present times.

HUMANITIES

HUM 115 Introduction to Chicano Studies (A) . . . . . 3 credit hours
An overview of the origin, culture, philosophy, and present status of the Chicano.

HUM 120 The Native American Perspective: Arts and Ideas (A) . . . . . 3 credit hours
A study of the art and music of various Native American peoples and of the religion and philosophy from which the Native American art forms evolved.

HUM 126 Folklore of Mexico and the Southwest (A) . . . . . 3 credit hours
A study of the folklore of indigenous people and the Mestizo in Mexico and the Southwest.

HUM 127 Indigenismo and the Chicano (A). . . . . 3 credit hours
A refreshing change of pace for the student interested in a non-european approach to the often forgotten philosophies and ideas of native peoples in the Americas which have affected the Chicano. Cross reference with PHI 125. Can be accepted as Humanities or Philosophy credit.

HUM 225 Contemporary Chicano (A) . . . . . 3 credit hours
An interdisciplinary course dealing with current issues of the Chicano. General themes to be discussed and analyzed will include; alienation, community identity, political organization, conflict and change, ideology, religion, and power.

HUM 226 Comidas Chicanas (A) . . . . . 3 credit hours
A study of the history and folklore of comidas chicanas (cuisine), along with its position, traditional and contemporary, in the cultural matrix of the Chicano community.

LITERATURE

LIT 125 Introduction to Chicano Literature (A) . . . . . 3 credit hours
An overview of Chicano literature from its indigenous (native) roots to the present.

LIT 126 Native American Literature (A). . . . . 3 credit hours
A survey of the literature of the Native American.

LIT 128 Black Literature in America (A). . . . . 3 credit hours
A study of Black literature which includes methods of evaluation and analysis essential for understanding and appreciating the literary contributions of the Black writer.

LIT 228 Contemporary Chicano Literature (A) . . . . . 3 credit hours
Analyzes the various literary styles of contemporary Chicano literature and students will express themselves through their own literary works and research.

LIT 229 Contemporary Black Literature (A,R) . . . . . 3 credit hours
An analytical and critical study of contemporary Black literature emphasizing the plight and protest of Black Americans in American society.

MUSIC

MUS 101 History of Afro-American Music I (A) . . . . . 3 credit hours
A study of African music as one of the main sources of Black music in America. Emphasis will move from the music and musical instruments of Africa to the Jazz Age.

MUS 102 History of Afro-American Music II (A). . . . . 3 credit hours
The contemporary era beginning with the Jazz Age and moving to the present.

MUS 120 Introduction to Chicano Music (A) . . . . . 3 credit hours
An examination of selected works in Mexican music from pre-Columbian time to present concentrating on regional works and on 20th Century composers.

MUS 125 Practicum in Chicano Coro (A) . . . . . 3 credit hours
Designed to encourage and develop student singing skills beginning with Chicano "Corridos" or ballads and building to current songs of the Chicano movement.

PHILOSOPHY

PHI 125 Indigenismo and the Chicano (A). . . . . 3 credit hours
A refreshing change of pace for the student interested in a non-european approach to the often forgotten philosophies and ideas of native peoples in the Americas which have affected the Chicano. Cross reference with HUM 125. Can be accepted as Philosophy or Humanities credit.

PHI 240 Progressive Thinking and the Contemporary Chicano (A) . . . . . 3 credit hours
An analysis of the development of the Philosophy of the Chicano.

POLITICAL SCIENCE

POS 206 Federal Indian Policies (A). . . . . 3 credit hours
A general overview of federal relationships with the various tribes and the Indian population.

POS 230 Chicano and the Law (A). . . . . 3 credit hours
Provides insight into all phases of the jurisprudence system both Civil and Criminal.

POS 251 Chicano Political Experience (A) . . . 3 credit hours
A critical evaluation on leading issues affecting Chicanos in American society.

POS 253 Third World Policies and the Chicanos (A) . . . . . 3 credit hours
Provides a realistic look at the Chicano in relationship to the developing nations presently known as "Third World" countries.

POS 254 Chicano Legislative Review (A) . . . . 3 credit hours
A critical evaluation of leading issues effecting Chicanos in the legislative process. Includes a practicum which involves a follow-through of bills selected by the students. (Course offered when the State Legislature is in process)

POS 265 Black Political Thought and Experience (A,N) . . . . . 3 credit hours
A critical analysis and evaluation of the development of Black Political thought and the reciprocal impact of political institutions and organizations upon Blacks in America.

PSYCHOLOGY

PSY 255 Psychological Development of the Black Personality (A) . . . . . 3 credit hours
An in-depth study into the psychological factors of racism that influence the development of the Black personality.

PSY 260 Psychology of the Chicano (A,N) . . . . . 3 credit hours
Designed to develop an understanding of the psychological impact of the Chicano experience on the Chicano personality.

PSY 265 Social Psychology of the Native American (A) . . . . . 3 credit hours
Presents a view of the Native American personality in relations to the modern environment on the United States, from the Native American perspective.

PSY 266 Chicano Community Mental Health (A) . . . . . 3 credit hours
Deals with the individual and family mental health of the Chicano community.

SOCIOLOGY

SOC 165 Movimiento Estudiantil Chicano de Aztlan (A) . . . . . 3 credit hours
Designed to acquaint Chicano and bilingual students with general college information and educate them in the area of academic planning.

SOC 210 La Familia Chicana (A) . . . . . 3 credit hours
Designed to provide insights into the structure and traditions of the Chicano family as compared and contrasted with other American family structures.

SOC 230 Sociology of the Chicano (A) . . . . . 3 credit hours
Fundamental concepts and theories of sociology with comparative emphasis on the Chicano and his culture in America.

SOC 236 The Chicano and the Schools (A) . . . . . 3 credit hours
Studies problems of the Chicano student adapting to the schools and the teacher's response to them.

SOC237 Urbanization and the Chicano (A) . . . . . 3 credit hours
Studies rural folk values of the Chicano and their erosion in the urban setting.

SOC 238 Field Work in Barrio Studies (A) . . . . . 3 credit hours
Observation of selected barrios, institutions, and agencies to be conducted under supervision and after preparatory instruction to acquaint students with the barrio.

SOC 241 Sociology of the Black Community I (A) . . . . . 3 credit hours
Fundamental concepts and theories of sociology are related to Black people, their culture, and contributions to America.

SOC 242 Sociology of the Black Community II (A) . . . . . 3 credit hours
Presents the problems and characteristics of Black communities in relation to various agencies and institutions operating within them.

SOC 246 La Mujer Politica (A,N) . . . . . 3 credit hours
Delves into the traditional and contemporary roles of La Chicana.

SOC 266 The Contemporary Native American (A) . . . . . 3 credit hours
An intensive survey of the contemporary problems, issues and developments involving American Indians, both urban and rural.

SOC 267 The Native American in Urban America (A) . . . . . 3 credit hours
A study of the historical development of Native American communities within urban areas and an analysis of what it means to be an "urban Indian" in modern America.

Occupational Studies

BUSINESS OCCUPATIONS

Programs	Campus
Accounting	A, N, R
Bilingual Office Careers	N
Credit Management	A
Data Entry	N
Electronic Data Processing	N
General Clerical	A, N, R
Industrial Management	R
Legal Secretarial	A
Management	A, N, R
Marketing	A, N, R
Medical Secretarial	A
Office Administration	N, R
Public Administration	R
Real Estate	R
Secretarial	A, N, R
Stenographic	A, N, R
Supervisory Management	N
Traffic and Transportation Management	A
Word Processing Typing	N, R

HEALTH OCCUPATIONS

Dental Assisting	N
Diagnostic Radiologic Technology	A
Medical Office Management	A
Nuclear Medicine Technology	A
Nursing	A, N
Continuing Education for Nursing	A, N, R
Operating Room Technology	A
Optometric Assisting	N
Radiation Therapy Technology	A
Respiratory Therapy Technology	N

INDUSTRIAL OCCUPATIONS

BUILDING TRADES	
Bricklaying	R
Carpentry	R
Plumbing	R
Solar Energy - Installation & Maintenance	R
Surveying	R
DRAFTING AND DESIGN	
Architectural Technology	N
Civil Engineering Technology	R
Commercial Art	A
Drafting for Construction	R
Drafting for Industry	A, R
Graphic Arts	A
Industrial Mechanical Drafting Technology	N
Machine Drafting Technology	N
Photography	A
Technical Illustration	A
ELECTRICITY/ELECTRONICS	
Appliance and Refrigeration Technology	A
Biomedical Equipment Technology	A
Communications Electronics Technology	N
Consumer Electronics Technology	N
Electricity Industrial/Commercial	R
Electronics Digital Technology	R
Electronics Technology	A,N
Industrial Electronics/Electricity Technology	R
Industrial Maintenance Technology	R
Vending Machine Technology	A
MACHINE SHOP	
Machine Shop	N
MECHANICS	
Airframe Power Plant	A
Auto Body Painting	N
Auto Body Service	N
Automotive Mechanics	N, R
Business Machine Technology	A
Diesel Power Heavy Equipment & Truck Mechanics	R
Fluid Power	R
Foreign Automative Mechanics	A
Heavy Equipment Operation & Preventive Maintenance	R
Sports Crafts & Specialty Area Mechanics	N
MINERAL	
Petroleum Technology-Exploration/Production	R
QUALITY ASSURANCE	
Quality Assurance	A
WELDING & FABRICATIONS	
Welding & Fabrication	A, N, R

* Program curriculum and course descriptions were not approved prior to publication of the catalog. Contact the Division of Industrial Occupations on the Red Rocks Campus for program details.

SERVICE OCCUPATIONS

Audio Visual Technology	R
Community & Social Service Associate	A
Criminal Justice Program	R
Dietetic Technology	N
Early Childhood Education and Management	A, N, R
Environmental Technology	R
Fire Science Technology	R
Food Service and Management	N
Gerontology/Geriatrics & Activities Directing	A
Hotel Motel Operations	A
Information Media Technology	A
Executive Housekeeping	A
Paralegal	A
Recreational Leadership	R
Traffic Engineering Technology	R
Urban Horticulture	N
Urban Planning Technology	R
Water-Wastewater Technology	R

Note:
Auraria Campus — A
North Campus — N
Red Rocks Campus — R

Catalog 1977-78
OCCUPATIONAL STUDIES GENERAL INFORMATION

Occupational Studies at the Community College of Denver consists of the following instructional divisions: Business, Health, Industrial and Service Occupations. Instructional programs within these Divisions are designed to prepare an individual for employment and provide additional education or training for those currently employed. Although many of the courses can be transferred to other institutions of higher education, this is not the design of our curriculum. If a student enrolls with the intent of transferring to another institution, he or she, should obtain prior approval from the receiving institution.

Program Admission

Admission to the College does not assure acceptance of an individual student in a particular occupational course or program. Occupational Studies students must declare their program major at the time of registration and in the event of a change in program major, must notify the registrar's office of such change.

Advisory Committees

Each Occupational Studies Program has an advisory committee representative of that particular business, industry or professional area to assist the College in planning and development activities, such as, curriculum, equipment, employment opportunities, etc.

Employment Opportunities

Occupational Studies courses and program are designed to meet the employment needs of the greater Denver Metropolitan Area. It is the responsibility of the College to keep their educational offerings current to the employment needs, and it is the student's responsibility to put forth the effort to achieve to the best of his or her ability. Employment opportunities available are on file in the College's Job Development and Placement Offices.

Job Development and Placement

The Job Development and Placement Office on the respective campuses, instructors, and division directors in the area of Occupational Studies maintain close contact with business and industry concerning job opportunities and training needs. A record of available employment positions, both full and part-time, is kept in the Job Development and Placement Office. This office coordinates all of the college's efforts to assist students in obtaining suitable full-time employment in occupations for which they have been prepared at the college. The services include assistance in resume development. Other services are: application aids, job interview aids, summer employment, and volunteer listings. Students interested in full-time and part-time jobs should contact the Job Development and Placement Office on their campus and complete and application for employment.

Student Advising

So that an Occupational Studies student can be assured proper direction through the learning objectives of a program, he or she will be assigned a faculty advisor representing the student's major program of study. Students will be required to seek assistance from their faculty advisor.

Independent Study

The college recognizes a commitment to provide for individual needs, and independent study is seen as one means of meeting this commitment. This program provides an opportunity for a student to pursue study on a special topic outside the regular offerings of the institution. The Division Director or appropriate supervisor will select an instructor and determine the amount of credit to be granted. Credit will be granted proportional to the hours of experience, but not to exceed four credits.

Cooperative Work Experience

In some program areas, cooperative work experience is a part of the course of study. The student is contracted through the instructor/coordinator to a work station, somewhere in the Metropolitan Denver area, which is related to his educational program and occupational objective. He works under the immediate supervision of experienced personnel at the business, industry or agency involved, with a college coordinator providing general coordination and evaluation. Prerequisites for enrollment to Cooperative Work Experience are permission of the instructor and approval of the division director. A weekly one-hour seminar is required by all students.

Credit will be granted proportional to the hours of work experience, but not to exceed 16 semester hours in a nine-month program, or 32 credit hours in an associate degree program.

Health Occupations Laboratory Experience

The required hospital, clinic or doctor's experience for employment in the health occupations field, the students receive instruction and are directly supervised by college faculty.

Clinical Practicum

In the required hospital, clinic or doctor's office experience for employment in the health occupations field, the students receive instruction by college faculty, but are supervised in practicum by clinical personnel, coordinated by college faculty.

Challenge Allowance of Credit

Students may be permitted to demonstrate that their achievement level, based on prior experience(s), is the equivalent of that required for enrollment in the successful completion of a course offered by the College, according to the following conditions and procedures:

1. The student must be currently enrolled in the College
2. The student must submit a petition to the appropriate division director setting forth the nature of the student's previous experience(s) and planned career objective(s) which support his petition to seek allowance of credit in lieu of enrolling and completing a particular course.
3. Upon approval of the Division Director, an evaluation shall be arranged whereby the student shall have the opportunity to demonstrate that his level of achievement is the equivalent of that required by the College for successful completion of a particular course.
4. Not more than one evaluation or allowance of credit for a particular course will be arranged during any semester of the regular academic schedule of the College.
5. Upon successful completion of the evaluation for allowance of credit, the student shall be awarded full credit for the particular course(s) as set forth in his approved petition.
6. Students pay tuition only if they pass and would normally owe tuition for the credit.

Life Experience Allowance of Credit

The Community College of Denver may allow college credit for life experience which is evaluated by the college to be equivalent to the content of its own courses in Occupational and General Studies. Life experience is defined as any program of instruction or related experiences, formal or informal, which has not been previously equated to college credit. Students who wish to petition for such credit should contact the appropriate instructional division for complete information.

Certificate of Completion

The College offers many short courses, conferences, workshops and seminars. These will vary in length from one to two meetings of short duration to units necessitating many clock hours accumulated over a period of several weeks. Successful completion of short courses of this type will result in the granting of a Certificate of Completion.

A Certificate of Completion may also be granted upon the successful completion of a course or courses in fulfillment of an educational objective leading to job-entry level employment as developed in conjunction with an advisor and approved by the respective division director leading to job entry employment. In order to receive this Certificate the applicant must file the Application for Graduation form at the time of registering for the final semester. This form is available from the Office of Admissions and Records.

Associate Degree

The Associate Degree is awarded by the Community College of Denver upon the successful completion of the requirements for the degree as shown by Occupational Studies program major. The student must earn an overall grade point average of 2.0 in all credit counted towards the degree.

Additional Major Courses

Additional major courses are available beyond the requirements for an Associate Degree. These courses are designed for persons seeking continuing education, upgrading and cross-training activities to supplement their current employment. Interested persons should refer to the Catalog Course Descriptions and if further information is requested, contact the appropriate instructional division.

Career Center

Located within the Student Services complex, a Career Center is maintained. This area has available occupational information, a collection of college catalogs, and materials to assist students in making informed career decisions. A vocational guidance specialist who has major responsibility in assisting students with career plans is in charge of the Center.

Attendance

Regular attendance is required by all Occupational Studies Programs. Learning objectives are designed around the students' attendance and absenteeism will definitely affect a student's achievement.

Safety

Correct safety instruction and practices are a vital concern within the instructional programs of the College and it is the responsibility of all persons to practice correct safety measures. If an injury does occur during instruction, the student needs to report such injury to the instructor immediately, so that first aid may be administered or the student may be directed to the College Health Service Office. Students with health problems should report such problems to the Health Service Office, so that information will be available in case of an emergency.

Student Health Insurance

All students are urged to have health insurance (student plan, family plan or other) before enrolling in any Occupational Studies instructional course or program. In case of an injury or emergency medical care, the College is not responsible for students' financial obligations. For additional information please contact the Student Services Office.

Warren Center

The Community College of Denver, Red Rocks Campus, and the Warren Occupational Technical Center have established a cooperative agreement whereby students from either of the institutions may enroll in one or the other's programs. This agreement, in essence, doubles the number of offerings in both institutions.

Admissions Procedures for Warren Center

Secondary Students to Community College of Denver — Red Rocks Campus, any high school student desiring to take an occupational program at Community College of Denver, Red Rocks Campus (CCD-RRC), must contact their home high school counselor who will assist them through the Warren Center into CCD-RRC.

Post-Secondary Students to Warren Center

Any post-secondary student desiring to take a day-time occupational program at Warren Center must contact the Vocational Guidance Specialist at CCD-RRC for assistance. For entry into evening occupational programs at Warren Center contact the specific Division Director at CCD-RRC.

Any occupational program which is located both at CCD-RRC and at Warren Center will be filled on a space-available basis. Where duplicate occupational programs exist, CCD-RRC classes will be filled on a priority. Refer to the general catalog for additional information as needed.

DIVISION OF BUSINESS OCCUPATIONS

Where a program does not indicate the campus by the key A,N, or R, it is suggested that you call the campus of your choice of information

ACCOUNTING (A R N)
Certificate

This program is designed to prepare individuals with entry-level skills for employment in basic bookkeeping and related areas.

Required Major Courses

Course	Title	Cr. Hrs.	Ct. Hrs.
ACC 111	Accounting Principles I	5	75
ACC 112	Accounting Principles II	5	75
		10	150

Required Related Courses

BSI 115	Business Machines	1	15
BUS 110	Business Math	3	45
BUS 135	Business Correspondence	2	30
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communications Fundamentals	3	45
MAN 105	Introduction to Business	3	45
SEC 101	Typewriting I	4	75
		20	315
	TOTAL REQUIRED HOURS	30	465

Additional Major Courses

ACC 109	Bookeeping and Accounting	3	45

ACCOUNTING (A N R)
Associate Degree

This program is designed to prepare students with skills and knowledges of accounting and related areas to enable them to obtain employment and to advance, with experience, to full-charge bookkeeping or junior accountant positions.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ACC 111	Accounting Principles I	5	75
ACC 112	Accounting Principles II	5	75
ACC 211	Intermediate Accounting I	5	75
		15	225
Accounting Electives:	* Selection of 10-16 hours with advisor approval.	10-16	150-240
ACC 212	Intermediate Accounting II	3	45
ACC 221	Cost Accounting	4	60
ACC 215	Accounting Systems OR	3	45
BUS 215	Systems (N)	3	45
ACC 231	Individual Income Tax	3	45
ACC 216	Governmental Accounting	3	45
		25-31	375-465

Required Related Courses

BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
BUS 297	Cooperative Work Experience	3	45
ECO 212	Principles of Economics	3	45
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communications Fundamentals	3	45
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 115	Principles of Management	3	45
MAN 225	Business Finance	3	45
SPE 101	Introduction to Speech	3	45
	* Elective	3	45
		38	570
	TOTAL REQUIRED HOURS	63-69	945-1035

Additional Major Courses

ACC 109	Bookkeeping and Accounting	3	45
ACC 110	Payroll & Machine Accounting (r)	3	45
ACC 232	Individual Income Tax II (R)	5	75

* Elective chosen must have approval of advisor.
* Ethnic Studies Elective — Auraria Campus Only.

ACCOUNTING

ACC 109 Bookkeeping and Accounting . . . . . 3 credits
A study of the basic elements of accounting. Course includes common bookkeeping procedures in handling cash receipts and disbursements; in dealing with accounts receivable and payable; in maintaining journals and ledgers. Emphasis in practice.
45 Theory Hrs. 45 Ct. Hrs.

ACC 110 Payroll and Machine Accounting (R) . . . . . 3 credits
Prerequisite: ACC 109 Bookkeeping and Accounting or ACC 111 Accounting Principles I or consent of instructor.
A study of various payroll systems including the study of related laws and practices. Includes practice in preparation of payrolls and computation of deductions.
45 Theory Hrs. 45 Ct. Hrs.

ACC 111 Accounting Principles I. . . . . 5 credits
Corequisite: BUS 110 Business Math or equivalent.
An introductory study of accounting principles to acquaint the student with the theory and logic that underlie accounting procedures. Course content includes the accounting cycle, periodic reporting, notes, inventory, systems and controls and longterm assets.
75 Theory Hrs. 75 Ct. Hrs.

ACC 112 Accounting Principles II . . . . . 5 credits
Prerequistie: ACC 111 Accounting Principles I.
A continuation of Accounting Principles I with emphasis on partnership and corporation accounting, department and branch accounting, introduction to cost systems, management reports and special analysis.
75 Theory Hrs. 75 Ct. Hrs.

ACC 211 Intermediate Accounting I . . . . . 5 credits
Prerequisite: ACC 112 Accounting Principles II.
A review of the accounting cycle. A detailed study of the conceptual framework of accounting as it relates to the corporate structure.
75 Theory Hrs. 75 Ct. Hrs.

ACC 212 Intermediate Accounting II . . . . . 3 credits
Prerequisite: ACC 211 Intermediate Accounting I.
A continuation of the study of the framework of accounting as begun in Intermediate I.
45 Theory Hrs. 45 Ct. Hrs.

ACC 215 Accounting Systems . . . . . 3 credits
Prerequisites: ACC 112 Accounting Principles II, EDP 100 Principles of Electronic Data Processing.
A study of the integration of computers and accounting, and the installation and control of accounting systems in business. Emphasis on utilization of a computer to prepare management reports.
45 Theory Hrs. 45 Ct. Hrs.

ACC 216 Governmental Accounting . . . . . 3 credits
Prerequisite: ACC 111 Accounting Principles I.
A study of the budgeting and fund control at the local, state, and federal levels. Includes the forecast and preparation of the budgetary requirement and anticipated revenue at each level of government. The accounting principles and procedures related to the government law, appropriate to the execution of the public law, concerning public funds are presented.
45 Theory Hrs. 45 Ct. Hrs.

ACC 221 Cost Accounting . . . . . 4 credits
Prerequisite: ACC 112 Accounting Principles II
A study of the cost accumulation methods and the management reports. The concepts and principles of job order, process, standard and direct cost systems; budgeting; planning and control of costs are included.
60 Theory Hrs. 60 Ct. Hrs.

ACC 231 Individual Income Tax I . . . . . 3 credits
Designed to familiarize the student with the most frequently used tax forms, tax information and procedures. Coverage is limited to individual income tax preparation as required by the Internal Revenue Service and the Income Tax Division of the Colorado Revenue Department.
45 Theory Hrs. 45 Ct. Hrs.

ACC 232 Individual Income Tax II (R) . . . . . 5 credits
Prerequisite: ACC 231 Individual Income Tax I or equivalent.
Continuation of individual income tax. In depth study of gains and losses emphasizing business and investment property, net operating losses, income averaging and tax credits. Selected problems will be solved through student research. Student is required to work in the Red Rocks Tax Service which gives practical application of knowledge to the preparation of actual tax returns.
75 Theory Hrs. 75 Ct. Hrs.

BILINGUAL OFFICE CAREERS (N)

Associate Degree

This program is designed to prepare students for entry-level positions and/or career advancement in businesses, governmental agencies, and other institutions which employ bilingual (Spanish-English) personnel.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
BOC 111	Spanish Typewriting and Machine Transcription	4	75
BOC 260	Spanish Business Correspondence and Documentation	3	45
BOC 124	Introduction to Spanish Gregg Shorthand	5	75
BOC 259	Clerical Simulation in Spanish	3	45
		15	240

Required Related Courses

ACC 109	Bookkeeping and Accounting	3	45
BUS 135	Business Correspondence	2	30
BUS 115	Business Math by Machines	4	60
BUS 297	Cooperative Work Experience	3	45
ENG 131	Business Communications Fundamentals	3	45
MAN 105	Introduction to Business	3	45
SEC 101	Typing II	4	75
SEC 102	Typing III	4	75
SEC 105	Filing and Records Control	2	30
SEC 116	Magnetic Typewriting (Memory)	3	45
SEC 121	*Gregg Shorthand I	5	75
SEC 122	* Gregg Shorthand II	4	60
SEC 123	*Shorthand Speedbuilding and Transcription	4	60
SPA 211	Intermediate Spanish	3	45
SPA 212	Intermediate Spanish	3	45
SPA 242	**Current Spanish Written-Spoken	3	45
		53	825
	TOTAL REQUIRED HOURS	68	1065

* Students not in the Secretarial area may select courses from other major areas. Appropriate courses will be suggested by advisor.

** Designed for students completing Second Year Spanish

BILINGUAL OFFICE CAREERS

BOC 111 Spanish Typewriting and Machine Transcription (N) . . . . . 4 credits
Prerequisite: Spanish I or equivalent
Introduction of the Spanish typewriting keyboard and principles of typewriting in Spanish. The student is encouraged to develop proficiency in speed and accuracy. Machine transcription is incorporated with the typewriting class. Tape recordings with voices from different Spanish-speaking countries is provided for transcription of correspondence.
60 Theory Hrs. 60 Ct. Hrs.

BOC 124 Introduction to Spanish Gregg Shorhand (N) . . . . . 5 credits
Prerequisite: Spanish II, BOC 260
This course introduces the theory of Gregg Shorthand Diamond Jubilee Series in Spanish. Students develop reading speeds from book plates and handwritten notes. Shorthand writing of familiar matter is demonstrated and all Gregg Shorthand principles are developed to achieve speeds of 60 words per minute. Transcription techniques are taught. In addition, the student may take dictation in English and transcribe/translate to Spanish or English.
75 Theory Hrs. 75 Ct. Hrs.

BOC 259 Clerical Simulation in Spanish (N) . . . . . 3 credits
This course is an office simulation class with diversified personnel to acquaint the student with various duties performed by such personnel. The material covers English-Spanish communications, telephone techniques, travel, money exchange, filing, and office routines that are characteristic to bilingual office situations.
45 Theory Hrs. 45 Ct. Hrs.

BOC 260 Spanish Business Correspondence & Documentation (N) . . . . . 3 credits
Prerequisite: Spanish II
This course is designed primarily for students enrolled in the Bilingual Office Careers program, and other students meeting the above prerequisites. The emphasis of this course is business communications, business correspondence, translating and interpreting techniques, and documents through simulated transactions.
45 Theory Hrs. 45 Ct. Hrs.

BUSINESS SIMULATION AND INTERNSHIP

BSI 105 Billing Clerk . . . . . 1 credit
One of several in the office job training projects. This unit covers the concepts of billing and introduces the applications of important general concepts of billing including purchase orders, invoicing, posting and preparation of credit memos. It also provides training on a computerized billing machine.
15 theory hours 10 laboratory

BSI 106 Recordkeeping. . . . . 3 credits
This course is designed to give the student a background in single-entry recordkeeping including sales, cash, payroll, retail, clerical and accounting clerk records, petty cash, bank reconciliations and a recordkeeping practice set.
45 theory hours 15 laboratory

BSI 107 Payroll Clerk . . . . . 1 credit
One of several in the office job training projects. Each unit is designed to give practical training in such clerical duties as documentation, posting, mathematical computations, filing, proofreading, organizing work, processing, and communications. This unit involves jobs relating to office cashier duties, payroll clerical details, and the keeping of a one-write system pegboard payroll involving time cards, employee earnings records, payroll register, checks, and reports. Completion of this course leads to entry-level employability in a cluster of clerical jobs concerned with payroll and cashier work.
15 theory hours 10 laboratory

BSI 108 Office Internship . . . . . 2 credits
Pre-requisite: Basic typing skills
Pre-or co-requisite: Minimum of 2 BSI modules
One of several in the office job training projects. This unit is designed to provide students with practical training experience to apply learned skills and techniques in an actual business office setting.
30 theory hours

BSI 109 Telephone Techniques . . . . . 1 credit
One of several in the office job training projects. This unit covers use of directories, basic telephone equipment, and switchboard. Organization of work area, handling of calls, basic terminology, billing, special services, voice control, and message taking are covered. Some hands-on experience is provided. Completion of this course is appropriate both for those seeking any kind of office employment and for those interested in specific receptionist/telephone jobs.
15 theory hours 10 laboratory

BSI 115 Business Machines . . . . . 1 credit
One of several in the office job training projects. This unit will stress operating a 10-key calculator by the touch system for developing speed and accuracy. Timed tests will be periodically administered under office conditions and job application testing simulations.
15 theory hours 10 laboratory

BSI 116 Job Search. . . . . 1 credit
One of several in the office job training projects. This unit emphasizes the analysis of the job market, the assessment of personal qualifications; the preparation of the application and follow-up materials and techniques of the job interview.
15 theory hours 10 laboratory

BSI 117 Personal Typewriting . . . . . 1 credit
One of several in the office job training projects. This module is designed for those who have had little or no instruction in typewriting techniques. This course is organized into five parts, each representing a basic typewriting operation: Basic skill mastery drills, centering, manuscript, business letters and tabulation. (This does not substitute for the regular first semester of typewriting).
15 theory hours 10 laboratory

BSI 118 Control Clerk . . . . . 1 credit
Prerequisite: Basic typing
One of several in the office job training projects. Each unit is designed to give practical training in such clerical duties as documentation, posting, mathematical computations, filing, proofreading, organizing work, processing, and communications. This unit involves job relating to traffic, purchasing, and stock control. Completion of this course leads to entry-level employability in a cluster of clerical occupations jobs.
15 theory hours 10 laboratory

BSI 119 Account Clerk 1 credit
One of several in the office job training projects. Each unit is designed to give practical training in such clerical duties as documentation, posting, mathematical computations, filing, proofreading, organizing work, processing and communications. This unit involves jobs relating to accounts payable, accounts receivable and credit clerk duties. Completion of this course leads to entry-level employability in the cluster of clerical jobs concerned with invoices, vouchers, credit information, and the preparation of special reports.
15 theory hours 10 laboratory

BSI 126 Refresher Typewriting. . . . . 1 credit
One of several in the office job training projects. This module is designed for those students who need review of the basic typewriting applications. Emphasis will be placed on speed building, centering, manuscripts, business letters and tabulations.
15 theory hours 10 laboratory

BSI 127 Refresher Shorthand. . . . . 2 credits
Prerequisites: Minimum dictation speed of 50 words per minute
This course is designed to provide review of theory, brief forms and phrases. Some work will be done on grammar and punctuation. The major emphasis will be on speedbuilding, mailability and transcription.
30 theory hours 20 laboratory

BSI 141 Office Orientation & Exploration I . . . . . 1 credit
This course is designed to give each student enrolled the opportunity to become familiar with the services available to students at Red Rocks and to explore careers in office occupations. Resource persons from the campus and the business, industry and government communities will participate.
15 theory hours 15 contact hours

BSI 142 Office Orientation & Exploration II . . . . . 1 credit
This course is designed to assist students in preparing for the logistics of getting and keeping a job. Campus resources as well as business, industry and government personnel will participate.
15 theory hours 15 contact hours

BSI 145 Typing Skill Development . . . . . 1 credit
Pre-requisite: touch typing
This course is designed to help the student gain speed and accuracy in typing. Intensive class drill work and prescriptive individual drill work will be assigned to a student to improve typing skills.
15 theory hours 15 contact hours

BSI 146 Office Occupations Seminar . . . . . 1 credit
These seminars are designed to make the students specifically aware of expectations of the business, industry and government sectors. Additionally, these seminars are designed to help students attain skills and knowledge they might not have received in other course work.
15 hours theory/lab 15 contact hours

BSI 147 Typing Numbers . . . . . 1 credit
This course is designed to help students build skills in typing numbers. Students will type sample financial statements and other numerical data.
15 hours theory/lab 15 contact hours

BSI 148 Communications in the Office . . . . . 1 credit
This course is designed to help students develop skills in verbal, telephone and mail communications.
15 hours theory/lab 15 contact hours

BSI 155 Gregg Shorthand Review . . . . . 1 credit
This course is designed for students who need to review and/or refresh their skills with regard to Gregg Shorthand theory.
15 theory hours 15 contact hours

BSI 156 Alpha Shorthand Review . . . . . 1 credit
This course is designed for students who need to review and/or refresh their skills in Alphabetic Shorthand theory.
15 theory hours 15 contact hours

BSI 157 Dictation Techniques . . . . . 1 credit
This course covers the communication techniques used when dictating into recording equipment or in dictating to a secretary.
15 theory/lab hours 15 contact hours

BUSINESS

BUS 095 Business Laboratory . . . . . 1 to 3 credits
Prerequisite: Enrollment in any Accounting, Secretarial, or Business Course.
The Business Lab provides facilities, equipment, and supplementary materials for students to use in completing assignments. Assistance is given on a one-to-one basis. For each credit hour the student is required to attend an average of one hour per week, however; the student may attend up to 3 hours per week. Grading is on a pass/fail basis.
45 to 135 lab hours 45 to 135 Ct. Hrs.

BUS 110 Business Mathematics . . . . . 3 credits
Prerequisite: MAT106 or consent of instructor.
Primarily directed to the needs of students in the Accounting and Management programs. This course emphasizes the development and understanding of concepts regarding various business applications. The students learn the mathematical problem solving in the areas of merchandising, financial accounting, and general business areas.
45 Theory Hrs. 45 Ct. Hrs.

BUS 115 Business Mathematics by Machines . . . . . 4 credits
Prerequisites: MAT106 or consent of instructor.
This course is designed to provide basic understanding of business mathematics and to develop the skills necessary to operate calculating machines efficiently.
60 Theory Hrs. 60 Ct. Hrs.

BUS 135 Business Correspondence (Clerical/Secretarial Emphasis) . . . . . 2 Cr. Hrs.
Prerequisites: ENG 131 or ENG 111 or equivalent.
Applied business technique to communications that require problem solving and an understanding of human relations in a business situation. Students evaluate the various kinds of correspondence commonly used by business. Primary emphasis is on improving skills in the areas of proofreading and editing for mailability, composing routine letters and memorandums, letter and report set-ups and a reinforcing of the mechanics required to achieve success in producing mailable business correspondence.
30 Theory Hrs. 30 Ct. Hrs.

BUS 136 Business Communications Applications . . . . . 3 credits
Prerequisites: ENG 131 or ENG 111 or equivalent.
Applied business technique of communications that require problem solving and an understanding of human relations in a business situation. Students compose and evaluate the various types of correspondence that are commonly used in business. Included will be the preparation and analysis of business reports, memos, etc. Emphasis will be placed on good writing principles. The course is designed primarily for accounting and management students and others who are interested in business.
45 Theory Hrs. 45 Ct. Hrs.

BUS 137 Business Listening Skills . . . . . 2 credits
Principles and techniques useful in developing listening skills applicable to common business situations (specifically by acquiring the four central listening abilities – overcoming distractions, detecting central ideas, maintaining emotional control, and evaluating spoken messages) so as to enhance employability at all levels. Designed primarily for accounting and management students and others interested in business.
30 Theory Hrs. 30 Ct. Hrs.

BUS 215 Systems (N) ..... 5 credits
Prerequisites: ACC 112 or MAN 112, EDP 100 and one programming language.
This systems course is designed to serve the needs of Data Processing, Accounting, and Management students. It is taught as follows:
1st 4 weeks — A data processing instructor teaches the steps to review and design a system.
2nd 4 weeks — An accounting instructor teaches the interplay of the system review in conjunction with accounting needs.
3rd 4 weeks — A management instructor teaches the management inter-play and supports the system review with emphasis on management information systems.
4th 3 weeks — Students complete a system review, revise, design, and present the new systems. This is a student team project, with team instruction from data processing, management, and accounting instructors.
75 Theory Hrs. 75 Ct. Hrs.

BUS 297 Cooperative Work Experience..... 3 credits
In some program areas, cooperative work experience is a part of the course of study. The student is placed at a work station, somewhere in the Metropolitan Denver area, which is related to his educational program and occupational objective. He works under the immediate supervision of experienced personnel at the business, industry or agency involved, with a college instructor providing general coordination. Prerequisites for enrollment in Cooperative Work Experience are permission of the instructor and approval of the division director.
15 Theory/60 Lab Hrs. 75 Ct. Hrs.

BUS 299 Independent Study ..... 1 to 3 credits
Prerequisite: Division Director approval.
Provides an opportunity for the student to engage in intensive study and research on a specific topic under the direction of a qualified faculty member. Conditions for electing this course are evaluated by the Director of Business Occupations, who will assist in selecting an advisor and determining the amount of credit granted for successful completion of the work.
15 to 45 Theory Hrs. 15 to 45 Ct. Hrs.

CREDIT MANAGEMENT (A)
Associate Degree

This program prepares students for entry-level positions in consumer and commerical credit institutions. The program is also designed to prepare those individuals already in the field for advancement to upper management positions.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs
CRM 111	Financial Institutions	2	30
CRM 112	Credit Fundamentals	3	45
CRM 113	Credit Management Problems	3	45
CRM 114	Credit and the Law	3	45
		11	165

Required Related Courses

ACC 111	Accounting Principles I	5	75
ACC 112	Accounting Principles II	5	75
BUS 115	Business Math by Machines	4	60
BUS 136	Business Communications Applications	3	45
BUS 297	Cooperative Work Experience	3	45
ECO 212	Principles of Economics	3	45
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communications Fundamentals	3	45
IMT 109	Business Materials Use	1	15
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 115	Principles of Management	3	45
MAN 225	Business Finance	3	45
	*Electives	9	135
		53	795
	TOTAL REQUIRED HOURS	64	960

*Elective chosen must have approval of advisor.
*Three semester hours must be selected from the Ethnic Studies area.

CREDIT MANAGEMENT (A)

CRM 111 Financial Institutions (A) ..... 2 credits
A study of the functions and roles of various financial institutions as they interact with the commerical, consumer and economic environment.
30 Theory Hrs. 30 Ct. Hrs.

CRM 112 Credit Fundamentals (A) ..... 3 credits
A study of the development and growth of consumer and retail credit and its effect on the American life style. Studies are made of commerical and governmental used of credit through an analysis of the actual operations of a retail, wholesale, and commerical credit department. Basis for credit making decisions will be discussed as well as various aspects of collections, bankruptcy, and charge-offs.
45 Theory Hrs. 45 Ct. Hrs.

CRM 205 Credit Management Problems (A) ..... 3 credits
Prerequisite: CRM 112 Credit Fundamentals.
Case Studies and discussions of credit department functions as they relate to the overall management and objectives of the business firm. Also explores the relationship of credit to other aspects of the business enterprise.
45 Theory Hrs. 45 Ct. Hrs.

CRM 206 Credit and the Law (A) ..... 3 credits
Prerequisite: CRM 112 Credit Fundamentals, MAN 106 Business Law or consent of instructor.
A presentation of the legal aspects of credit as it relates to interest, collections, conditional sales and installment contracts, wage assignments and the basic rights of debtor and creditor.
45 Theory Hrs. 45 Ct. Hrs.

DATA ENTRY (N)
Certificate of Achievement

The objective of this program is to prepare the Post-Secondary student for entry-level job employability in data entry positions.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs
EDP 103	Data Entry Laboratory	5	135
EDP 100	Principles of Electronic Data Processing	4	60
		9	195

Required Related Courses

ACC 109 OR	Bookkeeping and Accounting BSI 106 Recordkeeping	3	45
	TOTAL REQUIRED COURSES	12	240

Electronic Data Processing (N)
Associate Degree

The objective of this program is to prepare the student as an entry-level programmer.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
EDP 100	Principles of Electronic Data Processing	4	60
EDP 105	Assembler Language	4	60
EDP 106	COBOL	4	60
EDP 206	Advanced COBOL	3	45
EDP 208	RPG	3	45
EDP 215	Opperating Systems Concepts and JCL	3	45
EDP 216	EDP Seminar	1	15
EDP	Electives — Select 2	8	120
EDP 205	Advanced Assembler Language (4)		
EDP 205	FORTRAN IV (4)		
EDP 107	PL/1 (4)		
EDP 207	Advanced PI/L (4)		
		30	450

Required Related Courses

ACC 111	Accounting I	5	75
ACC 112 OR	Accounting II MAN 111 Managerial Accounting	3-5	45-75
BUS 136	Business Communications Applications OR ENG 112 English Composition II	3	45
BUS 215	Systems	3	45
ENG 131	Business Communications Fundamentals OR ENG 111 English Composition I	2-3	30-35
MAN 105	Introduction to Business	3	45
MAT 111	Introductory Alegbra	3	45
MAT 125	Introductory Statistics	3	45
SPE 101	Introduction to Speech	3	45
	*Electives	6	90
		34-37	510-555
	TOTAL REQUIRED HOURS	64-67	960-1005

* EDP 095, Data Processing Lab is required for students taking EDP courses.

*Electives chosen must have advisor approval.

ELECTRONIC DATA PROCESSING

EDP 095 **1 to 3 credits**
Prerequisite: Enrollment in any EDP course.
The lab provides facilities, equipment, and supplementary materials for students to use in completing assignments. Assistance is given on a one-to-one basis. For each credit hour the student is required to attend an average of one hour per week, however; the student may attend up to 3 hours per week. Grading is on a pass/fail basis.
45 to 135 lab hours 45 to 135 ct. hrs.

EDP 100 Principles of Electronic Data Processing . . . . . 4 credits
An introduction to the basic methods, techniques, and systems employed in using electronic data processing. The objective of this course is to give the student an understanding of the field of electronic data processing.
60 Theory Hrs. 60 Ct. Hrs.

EDP 103 Data Entry Laboratory (N) . . . . . 5 credits
Prerequisite: Typing speed of 45 wmp with 5 error maximum.
A practice course in the operation of the 3760 Data Entry machine and verifier. If the student reaches employable levels prior to completion of the semester, he may be given other equipment instruction as conditions permit. Because of conflicting keyboard arrangements, it is recommended that students avoid scheduling business machines concurrently with Data Entry Laboratory.
45 Theory Hrs./90 Lab Hrs. 135 Ct. Hrs.

EDP 105 Assembler Language (N) . . . . . 4 credits
Prerequisite: EDP 100.
An introduction to the coding and execution of simple business problems using IBM 370 Assembler Language.
60 Theory Hrs. 60 Ct. Hrs.

EDP 106 COBOL (N) . . . . . 4 credits
Prerequisite: EDP 100.
An introduction to the coding and execution of simple business problems using COBOL.
60 Theory Hrs. 60 Ct. Hrs.

EDP 107 PL/I (N) . . . . . 4 credits
Prerequisite: EDP 100.
An introduction to the coding and execution of simple business problems using PL/I.
60 Theory Hrs. 60 Ct. Hrs.

EDP 108 Basic . . . . . 3 credits
Prerequisite: EDP 100
An introduction to the coding and execution of simple problems using BASIC.
45 Theory Hours 45 Ct. Hrs.

EDP 205 Advanced Assembled Language (N) . . . . 4 credits
Prerequisite: EDP 105.
A continuation of EDP 105 using more advanced applications and programming techniques.
60 Theory Hrs. 60 Ct. Hrs.

EDP 206 Advanced COBOL (N) . . . . . 3 credits
Prerequisite: EDP 106.
A continuation of EDP 106 using more advanced applications and program techniques.
45 Theory Hrs. 45 Ct. Hrs.

EDP 207 Advanced PL/I (N) . . . . . 4 credits
Prerequisite: EDP 107.
A continuation of EDP 107 using more advanced applications and programming techniques.
60 Theory Hrs. 60 Ct. Hrs.

EDP 208 RPG (N) . . . . . 3 credits
Prerequisite: EDP 100.
An introduction to the coding and execution of simple business problems using the Report Program Generator language.
45 Theory Hrs. 45 Ct. Hrs.

EDP 209 Fortran IV (N) . . . . . 4 credits
Prerequisite: EDP 100.
An introduction to the coding and execution of simple business problems using Fortran IV.
60 Theory Hrs. 60 Ct. Hrs.

EDP 215 Operating System Concepts and JCL (N) . . . . . 3 credits
Prerequisite: EDP 105 or EDP 106.
An introduction to IBM 360/370 OS/VS operating system concepts and job control language. Emphasis is on operating system and virtual storage concepts, coding JOB, EXEC, and DD statements, using catalogued procedures, job set-up for utility routines, and debugging concepts.
45 Theory Hrs. 45 Ct. Hrs.

EDP 216 EDP Seminar (N) ..... 1 credit
Prerequisite: EDP 205 or EDP 207.
A seminar designed to introduce the student to "state of the art" applications and/or techniques in electronic data processing.
15 Theory Hrs. 15 Ct. Hrs.

GENERAL CLERICAL (A,N,R)
Certificate

This program is designed to prepare students for entry-level positions and/or for career advancement in businesses, governmental agencies, and other institutions which employ persons in the general office area.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ACC 109	Bookeeping and Accounting	3	45
BSI	Business Stimulation and Internship	1-10	15-160
BUS 115	Business Mathematics by Machines	4	60
BUS 135	Business Correspondence	2	30
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
SEC 105	Filing and Records Control	2	30
SEC 200	Office Procedures		
OR	SEC 205 Office Simulation	3	45
	*Business Elective	3	45
		26-35	420-565
	Required Related Courses		
ENG 131	Business Communications Fundamentals	3	45
	TOTAL REQUIRED HOURS	29-38	465-610

*Elective chosen must have approval of advisor.

INDUSTRIAL MANAGEMENT (R)
Associate Degree

This program provides the student with a broadly based exposure to general business and industrial functions and fundamental management concepts. Upon completion the student should qualify for job entry into a wide variety of lower level general production positions which carry initial functional administrative responsibility. Students already employed should acquire background necessary for personal development directed to job advancement.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
INM 211	Production Management I	3	45
INM 212	Production Management II	3	45
INM 215	Production Management Case Study	2	30
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 111	Managerial Accounting I	3	45
MAN 112	Managerial Accounting II	3	45
MAN 115	Principles of Management	3	45
MAN 116	Principles of Supervision	3	45
MAN 225	Business Finance	3	45
		36	540

Required Related Courses

ECO 212	Principles of Economics-Macro	3	45
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communication Fundamentals	3	45
MAR 107	Principles of Marketing	3	45
MAT 111	Introductory Algebra	3	45
MAT 125	Statistics	3	45
SPE 101	Introduction to Speech	3	45
	*Minimum of 3 elective courses	6	90
		28	420
	TOTAL REQUIRED HOURS	64	960

*Electives chosen must have approval of advisor.

INDUSTRIAL MANAGEMENT (R)

INM 103 Occupational Safety (R) ..... 2 credits
Course is designed to acquaint students with the responsibilities of the worker and/or first line supervisor with regard to OSHA, workman's compensation, and on-the-job safety training.
30 Theory Hrs. 30 Ct. Hrs.

INM 211 Production Management I ..... 3 credits
Preparation in principles and practices of industrial management. Emphasis given to the organization structure of a production enterprise; production facilities; methods and procedures for effective plant layout; and other mechanisms necessary for effective control over production, quality, inventories, costs and budgets.
45 Theory Hrs. 45 Ct. Hrs.

INM 212 Production Management II . . . . . 3 credits
Pre-requisite: INM 211 Production Management I
A continuation of Production Management I, this course emphasizes development of skill and knowledge in industrial relations, employee development, systems, procedures, work simplification, and risk management.
45 Theory Hrs. 45 Ct. Hrs.

INM 215 Production Management Case Study . . . . . 2 credits
Pre-requisite: Consent of instructor.
A practical approach to problem solving and decision making in a production oriented company using case examples which require an integrative approach using the various factors of the organization and its processes in a mode of management by objectives.
30 Theory Hrs. 30 Ct. Hrs.

LEGAL SECRETARIAL (A)
Associate Degree

This program is designed to prepare students for entry-level positions in the legal secretarial field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
SEC 103	Typing III	4	75
SEC 105	Filing and Records Control	2	30
SEC 111	Alphabetic Shorthand I		
OR	SEC 121 Gregg Shorthand I	5	75
SEC 112	Alphabetic Shorthand II		
OR	SEC 122 Gregg Shorthand II	4	75
SEC 116	Magnetic Typewriting (Memory)	3	45
SEC 123	Shorthand Speedbuilding & Transcription	4	60
SEC 130	Machine Transcription	4	60
SEC 206	Legal Terminology, Procedure and Dictation	5	75
		39	645

Required Related Courses

ACC 109	Bookeeping and Accounting		
OR	ACC 111 Accounting Principles I	3-5	45-75
BUS 115	Business Math by Machines	4	60
BUS 135	Business Correspondence	2	30
BUS 297	Cooperative Work Experience	3	45
ENG 131	Business Communications Fundamentals	3	45
IMT 109	Business Materials Use	1	15
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
PAR 107	Legal Research	3	45
SEC 116	Magnetic Typewriting (Memory)	3	45
	*Psychology Elective	3	45
	*Ethnic Studies Elective-Auraria Campus	3	45
		35-37	525-555
	TOTAL REQUIRED HOURS	74-76	1170-1200

*Electives chosen must have approval of advisor.

MANAGEMENT (A,N,R)
Associate Degree

This program provides the student with a broadly based exposure to general business functions and fundamental management concepts. Upon completion the student should qualify for job entry into a wide variety of lower level general business positions which carry initial functional administrative responsibility. Students already employed should acquire background necessary for personal development directed to job advancement.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 115	Principles of Management	3	45
MAN 116	Principles of Supervision	3	45
MAN 225	Business Finance	3	45
MAN 239	Business Policies	2	30
MAR 107	Principles of Marketing	3	45
	*Minimum of 2 elective courses	5-6	75-90
		26-27	390-504

Required Related Courses

ACC 111	Accounting Principles I		
OR	MAN 111 Managerial Accounting I	3-5	45-75
ACC 112	Accounting Principles II		
OR	MAN 112 Managerial Accounting II	3-5	45-75
BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
ECO 212	Principles of Economics	3	45
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communications Fundamentals	3	45
MAT 111	Introduction to Algebra	3	45
SPE 101	Introduction to Speech	3	45
	*Minimum of 3 elective courses	8-9	120-135
		36-41	540-615
	TOTAL REQUIRED HOURS	62-68	930-1020

Additional Major Courses

MAN 205	Small Business Management
MAN 209	Management Seminar
MAN 120	Office Management.
	Any Marketing Course
BUS 137	Business Listening Skills

* Electives chosen must have approval of advisor
One elective is to be chosen from the Ethnic Studies area-Auraria Campus only.

MANAGEMENT

MAN 105 Introduction to Business . . . . . 3 credits
A survey course enabling the student to gain an understanding of the overall business system and of the individual business institution. Surveys the functions and interrelationships within the individual business enterprise, and with its commercial and economic environment. Emphasizes the primary functional areas common to all types of business enterprise.
45 Theory Hrs. 45 Ct. Hrs.

MAN 106 Business Law . . . . . 4 credits
A study of American law as it related to such subjects as man's agreements with other men (contracts), man's willingness to work with other men (agency), man's accidental injuries (torts), man's property ownership, commercial paper, sales, consumer rights, and the court system. This course is designed to familiarize the student with basic rules of American society, how they have developed, and how they are administered.
60 Theory Hrs. 60 Ct. Hrs.

MAN 111 Managerial Accounting I (N,R) . . . . . 3 credits
A study of accounting for planning and control as viewed through the eyes of managers who are subject to accounting measures of performance and who often are heavily dependent on accounting information for guidance in decision making.
Emphasis is placed upon the language of the accountant, concepts and principles that guide accountants in providing data of maximum usefulness, an overview of the accounting process, upon a knowledge of the flow and management of cash and securities, and on financial analysis.
45 Theory Hrs. 45 Ct. Hrs.

MAN 112 Managerial Accounting II (N,R) . . . . . 3 credits
A continuation of managerial accounting as it pertains to planning for profits, the budgeting process, cost behavior, management of inventories, control of overhead, cost of capital, impact of income taxes on management planning, and internal controls through accounting.
45 Theory Hrs. 45 Ct. Hrs.

MAN 115 Principles of Management . . . . . 3 credits
This course is designed to focus on the fundamentals of business organization as it applies to planning, organizing, and controlling. Emphasis will be placed on methods of recognizing and solving organizational problems, and measuring corporate results against objectives.
45 Theory Hrs. 45 Ct. Hrs.

MAN 116 Principles of Supervision . . . . . 3 credits
Prerequisite: MAN 115 or Consent of Instructor
A study of the principles and techniques of managing and motivating personnel. This course is designed for the student who is interested in supervising others or for those presently in supervision. Course content will focus on the human interaction in supervision as well as the personnel functions of selection, motiviation, evaluation, training, and wage administration.
45 Theory Hrs. 45 Ct. Hrs.

MAN 117 Time Management (A) . . . . . 2 credits
This course is intended to provide the student with the conceptual knowledge and tools to make better use of his time in the management function.
30 Theory Hrs. 30 Ct. Hrs.

MAN 120 Office Management (A). . . . . 2 credits
Emphasis is placed on the functions of the office. Includes office organization, work in the office, office layout, equipment and supplies procurement and control, work flow, forms design, record storage and retrieval systems, personnel administration and problems, and Government control.
30 Theory Hours 30 Ct. Hrs.

MAN 205 Small Business Management. . . . . 3 credits
A study of the importance of the small business, its problem status, and requirements for success. Focus is on the fundamentals basic to small business operations while recognizing variations in application suited to particular needs. Specific management problems are considered on an individual basis.
45 Theory Hrs. 45 Ct. Hrs.

MAN 209 Management Seminar. . . . . 1-4 credits
Prerequisite: Consent of instructor.
A variable content and credit course to provide for the offering of: (1) special coverage of areas of current topical interest, (2) experimental coverage of potential new units or courses, and (3) program integrating effort via seminar and simulation techniques.
15-60 Theory Hrs. 15-60 Ct. Hrs.

MAN 225 Business Finance . . . . . 3 credits
Prerequisite: Consent of instructor.
A study of the principles, concepts, and techniques used to finance business operations. The course will concentrate on the analysis of financial needs, sources and uses of short term funds, intermediate term financing, long term funding, and a survey of financial institutions. A review of fiscal and monetary policy is included in order to understand the impact of government activity on the business community.
45 Theory Hrs. 45 Ct. Hrs.

MAN 238 Public Administration Policies (R) . . . . . 3 credits
Pre-requisite: Consent of instructor.
A study of policy formulation and its relationship to effective management in the public sector. Various areas previously studied are related to policy decision-making through the use of case studies.
45 Theory Hrs. 45 Ct. Hrs.

MAN 239 Business Policies . . . . . 2 credits
Prerequisite: Consent of instructor.
A study of policy formulation and its relationship to effective management of various areas such as marketing, production, finance, and personnel. Various areas previously studied are related to policy decision-making through the use of case studies.
30 Theory Hrs. 30 Ct. Hrs.

MARKETING (A,N,R)
Associate Degree

This program provides the student with a broadly based exposure to general business functions and fundamental management concepts, with emphasis on the marketing function. Upon completion of the program, the student should qualify for job entry into a wide variety of lower level general business positions, particularly those with sales and initial marketing administrative or support responsibility. Students already employed should acquire background necessary for personal development directed to job advancement in marketing related areas.

Required Major Courses

Course No	Title	Cr. Hrs.	Ct. Hrs
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 115	Principles of Management	3	45
MAN 239	Business Policies	2	30
MAR 107	Principles of Marketing	3	45
MAR 108	Introduction to Salesmanship	3	45
MAR 109	Principles of Advertising	2	30
MAR 215	Principles of Retailing	3	45
MAR 216	Principles of Purchasing	2	30
	*Minimum of 1 elective course	3-5	45-75
		28-30	420-450

Required Related Courses

ACC 111	Accounting Principles I		
OR	MAN 111 Managerial Accounting I	3-5	45-75
ACC 112	Accounting Principles II		
OR	MAN 112 Managerial Accounting II	3-5	45-75
BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
ECO 212	Principles of Economics	3	45
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communications Fundamentals	3	45
MAT 111	Introduction to Algebra	3	45
SPE 101	Introduction to Speech	3	45
	*Minimum of 2 elective courses	6	90
		33-37	495-555
	TOTAL REQUIRED HOURS	61-67	915-1005

Additional Major Courses

Any Management Course Not Required Above

*Elective chosen must have approval of advisor.

One elective is to be chosen from the Ethnic Studies Area-Auraria Campus only.

MARKETING

MAR 107 Principles of Marketing . . . . . 3 credits
A comprehensive introductory course enabling the student to gain a broad understanding of marketing as a functional process and as a managerial variable. Presents marketing as an integral system of activities designed to plan, price, promote, sell, and distribute goods and services to other business and to consumers.
45 Theory Hrs. 45 Ct. Hrs.

MAR 108 Introduction to Salesmanship . . . . . 3 credits
An overview course to enable the student to gain a basic understanding of the overall sales activity. Surveys the role of selling in the marketing process, communications and behavioral interactions in the buying-selling process, the functional techniques of salesmanship, and considerations of sales management.
45 Theory Hrs. 45 Ct. Hrs.

MAR 109 Principles of Advertising . . . . . 2 credits
An introductory course handling the theory, practice, and techniques of advertising. Considers the role of advertising and sales promotion on our economy. Includes a general survey of the kinds and purposes of different media, the psychological implications of typical appeals, and limited student practice in promotional programming.
30 Theory Hrs. 30 Ct. Hrs.

MAR 215 Principles of Retailing . . . . . 3 credits
Designed to acquaint the student with the fundamentals of retail store organization and management. Includes consideration of store location, layout, buying, pricing, operation, advertising, display, and analysis associated with handling of merchandise.
45 Theory Hrs. 45 Ct. Hrs.

MAR 216 Principles of Purchasing . . . . . 2 credits
Objectives and methodology of industrial, institutional, and governmental purchasing agents and buyers. Emphasizes value analysis, product quality control, maintenance of operating efficiency, analysis of competitive price quotations, and materials management.
30 Theory Hrs. 30 Ct. Hrs.

MEDICAL SECRETARIAL (A)

Associate Degree

This program is designed to prepare students for entry-level employment as medical secretaries and to advance, with experience, to related medical office management responsibilities.

Required Major Courses

Course No.	Title	Cr. Hr.	Ct. Hrs.
MOM 100	Introduction to Medical Office Procedures	3	45
MOM 108	Advanced Medical Office Procedures	3	45
MOM 107	Insurance Information Methods	3	45
MOM 106	Applied Science for Medical Office Workers	4	60
MOM 109	Medical Filing Procedures	1	15
MOM 116	Medical Ethics	1	15
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
SEC 103	Typing III	4	75
SEC 116	Magnetic Typewriting (Memory)	3	45
		30	495

Required Related Courses

ACC 109	Bookkeeping and Accounting		
OR	MOM 105 Medical Office Bookkeeping & Accounting	3	45
BUS 115	Business Math by Machines	4	60
BUS 135	Business Correspondence	2	30
BUS 297	Cooperative Work Experience	3	45
EDP 100	Principles of Electronic Data Processing	4	60
ENG 131	Business Communications Fundamentals	3	45
SEC 111	Alphabetic Shorthand I		
OR	SEC 121 Gregg Shorthand I	5	75
SEC 112	Alphabetic Shorthand II		
OR	SEC 122 Gregg Shorthand II	4	75
SEC 123	Shorthand Speedbuilding & Transcription	4	60
SEC 130	Machine Transcription	4	60
	*General Studies Elective	3	45
	*Ethnic Studies Elective	3	45
		42	645
	TOTAL REQUIRED HOURS	72	1140

*Elective chosen must have approval of advisor.

OFFICE ADMINISTRATION (N R)

Associate Degree

This program is designed to provide preparation for supervisory trainee positions in business and industry in the area of office occupations. Certified Professional Secretaries and those with previous office experience should consider this program.

Required Major Courses

Course No	Title	Cr. Hrs.	Ct. Hrs.
ACC 111	Accounting Principles I	5	75
ACC 112	Accounting Principles II	5	75
BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
BUS 297	Cooperative Work Experience	3	45
EDP 100	Principles of Electronic Data Processing	4	60
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 115	Principles of Management	3	45
MAN 116	Principles of Supervision	3	45
SEC 102	Typewriting II	4	75
SEC 105	Filing and Records Control	2	30
SEC 116	Magnetic Typewriting (Memory)	3	45
SEC 200 OR	Office Procedures SEC 205 Office Simulation	3	45
		48	735

Required Related Courses

ENG 131	Business Communications Fundamentals	3	45
ECO 212	Principles of Economics	3	45
	*Electives	7	105
		13	195
	TOTAL REQUIRED HOURS	61	930

* Elective chosen must have approval of advisor.

PUBLIC ADMINISTRATION (R)
Associate Degree

This program is designed to equip the individual with skill necessary to function successfully at various levels in the public sector. It provides fundamental training for those interested in managerial, administrative, or technical positions.

Required Major Courses

Course No	Title	Cr. Hrs.	Ct. Hrs
ACC 111	Accounting Principles I	5	75
ACC 115	Managerial Accounting	3	45
ACC 126	Governmental Accounting	3	45
BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
EDP 100	Principles of Electronic Data Processing	4	60
MAN 105	Introduction to Business	3	45
MAN 115	Principles of Management	3	45
MAN 116	Principles of Supervision	3	45
MAN 238	Public Administration Policies	3	45
BUS 297	Cooperative Work Experience or Business Elective	3	45
		36	540

Required Related Courses

ECO 212	Principles of Economics	3	45
ENG 131	Business Communications Fundamentals	3	45
POS 111	Introduction to Political Science	3	45
POS 121	American National Government	3	45
POS 122	American State and Local Government	3	45
	*Electives	9	135
		24	360
	TOTAL REQUIRED HOURS	60	900

*Elective to be selected with advisor approval.

REAL ESTATE (R)
Associate Degree

This program will prepare a student to work in real estate sales and real estate related fields, and financial institutions relating to real estate.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
REE 100	Real Estate Fundamentals	3	45
REE 105	Real Estate Finance	3	45
REE 111	Real Estate Law I	3	45
REE 217	Real Estate Contracts	3	45
REE 115	Real Estate License Preparation	3	45
REE 200	Principles of Insurance	2	30
REE 205	Real Estate Appraisal I	2	30
REE 206	Real Estate Appraisal II	3	45
REE 207	Real Estate Invstments	3	45
REE 208	Real Estate Trends	3	45
REE 209	Real Estate Closings	2	30
REE 210	Real Estate Tax Factors	3	45
REE 215	Real Estate Exchanging	3	45
REE 216	Real Estate Listings and Selling Techniques	4	60
		40	600

Required Related Courses

ACC 109	Bookkeeping and Accounting	3	45
BUS 115	Business Mathematics by Machines	4	60
BTR 127	Building Inspection for for Construction Trades	4	80
ECO 109	Applied Economics	3	45
ENG 131	Business Communications Fundamentals	3	45
MAN 105	Introduction to Business	3	45
MAN 115	Principles of Management	3	45
	*Elective	3	45
		26	410
	TOTAL REQUIRED HOURS	66	1010

*Elective must come from General Studies

REAL ESTATE (R)

REE 100 Real Estate Fundamentals . . . . . 3 credits
A general survey of real estate principles and practices designed to provide basic knowledge of real estate. Career information and real estate office practices and procedures will be covered.
45 theory hours 45 Ct. Hrs.

REE 105 Real Estate Finance (R) . . . . . 3 credits
A course of study covering the various methods of financing real property and the financial institutions that provide the funds for financing residential, commercial and income properties.
45 Theory Hrs. 45 Ct. Hrs.

REE 111 Real Estate Law I . . . . . 3 credits
A comprehensive case study of real estate law as it pertains to individuals, real estate brokers, subdividers, and developers, with special emphasis on ethics, statutes, and the law as applied in the State of Colorado.
45 Theory Hrs. 45 Ct. Hrs.

REE 115 Real Estate License Preparation (R) . . . . . 3 credits
Prerequisite: Consent of instructor.
This course is designed to prepare students for the Colorado Real Estate Examination.
45 Theory Hrs. 45 Ct. Hrs.

REE 200 Principles of Insurance (R) . . . . . 2 credits
A general survey of all types of insurance with special emphasis on property, life and automobile insurance.
30 Theory Hrs. 30 Ct. Hrs.

REE 205 Real Estate Appraisal I (R) . . . . . 2 credits
A basic study of the principles, techniques and accepted methods of evaluating real property as used by professional appraisers, emphasis is placed on the evaluation of residential property.
30 Theory Hrs. 30 Ct. Hrs.

REE 206 Real Estate Appraisal II (R) . . . . . 3 credits
A study of the income approach and rate of return approach in the evaluating of income producing properties such as apartments, motels, hotels, and office buildings.
45 Theory Hrs. 45 Ct. Hrs.

REE 207 Real Estate Investments (R) . . . . . 3 credits
A study of the investment opportunities in the real estate market including tax benefits derived from depreciation, tax free exchanges and preferred types of ownership.
45 Theory Hrs. 45 Ct. Hrs.

REE 208 Real Estate Trends (R) . . . . . 3 credits
A study based upon new concepts in the development of residential, multi-family, commercial and industrial real estate including trends to disperse population growth.
45 Theory Hrs. 45 Ct. Hrs.

REE 209 Real Estate Closings (R) . . . . . 2 credits
An in depth study of documents related to closings. This includes the understanding of debit and credit items on the closing statement itself.
30 Theory Hrs. 30 Ct. Hrs.

REE 210 Real Estate Tax Factors (R) . . . . . 3 credits
This course covers capital and ordinary gains, basis, installment sales, depreciation, and postponement of income tax.
45 Theory Hrs. 45 Ct. Hrs.

REE 215 Real Estate Exchanging (R) . . . . . 3 credits
For advanced students, the mechanics of exchanging, including documents involved. This course also covers an evaluation of the motivations for trading.
45 Theory Hrs. 45 Ct. Hrs.

REE 216 Real Estate Listings and Selling Techniques . . . . . 4 credits
A study of listing contracts, the various types and how to use them. An in-depth study of real estate selling and how it differs from other types of selling.
60 theory hours 60 contact hours

REE 217 Real Estate Contracts . . . . . 3 credits
Pre-requisite: consent of instructor
A complete and thorough examination of all types of contracts used in the State of Colorado, emphasis is placed on when and how to use them, and their proper preparation.
45 Theory Hrs. 45 Ct. Hrs.

SECRETARIAL (A N R)
Associate Degree

This program is designed to prepare students for entry-level positions and/or career advancement in businesses, governmental agencies and other institutions which employ persons in the secretarial area.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ACC 109	Bookkeeping and Accounting		
OR	ACC 111 Accounting Principles I	3-5	45-75
BSI	Business Simulation and Internship	1-10	15-150
BUS 115	Business Math by Machines	4	60
BUS 135	Business Correspondence	2	30
EDP 100	Principles of Electronic Data Processing	4	60
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
SEC 103	Typing III	4	75
SEC 105	Filing and Records Control	2	30
SEC 116	Magnetic Typewriting (Memory)	3	45
SEC 111	Alphabetic Shorthand I		
OR	SEC 121 Gregg Shorthand I	5	75
SEC 112	Alphabetic Shorthand II		
OR	SEC 122 Gregg Shorthand II	4	60
SEC 123	Shorthand Speedbuilding and Transcription	4	60
SEC 130	Machine Transcription	4	60
SEC 200	Office Procedures		
OR	SEC 205 Office Simulation		
OR	BUS 297 Cooperative Work Experience	3	45
		58-69	915-1080

Required Related Courses

ENG 131	Business Communications Fundamentals	3	45
SPE 101	Introduction to Speech	3	45
	*General Studies Elective	3	45
		9	135
	TOTAL REQUIRED HOURS	67-78	1050-1215

*Elective chosen must have approval of advisor.
* Ethnic Studies Elective-Auraria Campus Only.

SECRETARIAL

SEC 101 Typewriting I. . . . . 4 credits
For students without previous typewriting instruction. Introduces keyboard, machine parts, correct techniques, and accuracy in typewritten work. Strong emphasis on numbers. Foundations of typewriting applications: centering, letters, tabulation, and manuscript. Designed for students with either vocational or non-business objectives.
45 Theory Hrs. - 30 Lab. Hrs. 75 Ct. Hrs.

SEC 102 Typewriting II . . . . . 4 credits
Prerequisite: SEC 101 Typewriting I or equivalent.
Reinforcement of fundamentals of typewriting procedures. Development of speed and accuracy in more advanced levels of production work, using the prevailing business forms. Emphasis on quality of output.
45 Theory Hrs. - 30 Lab Hrs. 75 Ct. Hrs.

SEC 103 Typewriting III . . . . . 4 credits
Prerequisite: SEC 102 Typewriting II or equivalent.
Emphasizes attainment of professional levels of speed and accuracy, especially in production output. Concentration on problem typewriting with the student assuming the initiative for determining correct action and using appropriate business forms in completing the work.
45 Theory Hrs. - 30 Lab Hrs. 75 Ct. Hrs.

SEC 105 Filing and Records Control . . . . . 2 credits
Develops the ability to file and retrieve documents using alphabetic, numeric, and geographic systems, and provides the participant with records management skills.
30 Theory Hrs. 30 Ct. Hrs.

SEC 111 Alpha Shorthand Principles I . . . . . 5 credits
Prerequisite: SEC 101 Typewriting I or equivalent. (SEC 111 and SEC 101 may be taken concurrently)
An introductory course covering the theory of alphabetic shorthand.
75 Theory Hrs. 75 Ct. Hrs.

SEC 112 Alpha Shorthand Principles II . . . . . 4 credits
Prerequisite: SEC 111 Alpha Shorthand Principles I.
A continuation of Alpha Shorthand Principles I.
60 Theory Hrs. 60 Ct. Hrs.

SEC 116 Magnetic Typewriting (Memory) . . . . . 3 credits
Prerequisite: SEC 102 Typewriting II or equivalent.
Instruction in operating techniques of a magnetic media typewriter with memory feature to develop an employable skill in the operation of this equipment.
45 Lab Hrs. 45 Ct. Hrs.

SEC 121 Gregg Shorthand Principles I. . . . . 5 credits
Prerequisite: SEC 101 Typewriting I or equivalent. (SEC 121 and SEC 101 may be taken concurrently)
An introductory course covering the theory of Gregg Shorthand, Diamond Jubilee Series.
75 Theory Hrs. 75 Ct. Hrs.

SEC 122 Gregg Shorthand Principles II . . . . . 4 credits
Prerequisite: SEC 121 Gregg Shorthand Principles I or equivalent.
Reinforcement of basic Gregg Theory and development of skills in taking dictation.
60 Theory Hrs. 60 Ct. Hrs.

SEC 123 Shorthand Speed Building and Transcription Skills . . . . . 4 credits
Prerequisite: SEC 112 Alpha Shorthand Principles II or SEC 122 Gregg Shorhand Principles II.
Intensive practice in taking dictation and transcribing mailable materials.
45 Theory Hrs. - 15 Lab Hrs. 60 Ct. Hrs.

SEC 130 Machine Transcription . . . . . 4 credits
Prerequisite: SEC 102 Typewriting II and BUS 135 Business Correspondence.
This course provides instruction in the use of transcribing machines in the preparation of business letters and other correspondence. The course includes a review of letter styles, rules of transcription and punctuation, and the mechanics of producing mailable letters at high production rates.
45 Theory Hrs. - 15 Lab Hrs. 60 Ct. Hrs.

SEC 200 Office Procedures . . . . . 3 credits
Prerequisite: SEC 102 Typewriting II or equivalent.
This course introduces the student to the business world and acquaints the prospective office employee with the various office duties. Units covered include organization of office work, incoming and outgoing mail, postal and shipping services, telephone techniques, maintenance and control of office supplies, and business and social conduct. A practicum is used in the course which correlates classroom discussion with related office projects.
45 Theory Hrs. 45 Ct. Hrs.

SEC 205 Office Simulation (A,R) . . . . . 3 credits
Simulated office experience, including work flow, human relations, filing, record keeping and accounting. This course is designed to make the transaction from school to employment easier for those who have no actual office experience. Weekly seminars covering a variety of related topics will be held.
45 Theory Hrs. 45 Ct. Hrs.

SEC 206 Legal Procedure Terminology and Dictation (A) . . . . . 5 credits
Prerequisite: SEC 111 Alpha Shorthand Principles I or SEC 121 Gregg Shorthand Principles I.
The course provides intensive practice in preparing many types of legal documents, and introduces routine procedures in a legal office. Attention will be given to mastering terminology, meanings, spelling, and shorthand forms for dictation and transcription.
75 Theory Hrs. 75 Ct. Hrs.

STENOGRAPHIC (A,N,R)
Certificate

This program is designed to prepare students for entry-level positions and/or career advancement in businesses, governmental agencies and other institutions which employ persons in the stenographic area.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ACC 109	Bookkeeping and Accounting	3	45
BSI	Business Simulation and Internship	1-10	15-150
BUS 115	Business Mathematics by Machines	4	60
BUS 135	Business Correspondence	2	30
MAN 105	Introduction to Business	3	45
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
SEC 103	Typing III	4	75
SEC 105	Filing and Records Control	2	30
SEC 111 OR	Alphabetic Shorthand I SEC 121 Gregg Shorthand I	5	75
SEC 112 OR	Alphabetic Shorthand II SEC 122 Gregg Shorthand II	4	75
SEC 123	Shorthand Speedbuilding and Transcription	4	60
SEC 130	Machine Transcription	4	60
SEC 200 OR	Office Procedures SEC 205 Office Simulation	3	45
BUS 297	Cooperative Work Experience	3	45
		50-59	810-945

Required Related Courses

ENG 131	Business Communications Fundamentals	3	45
	TOTAL REQUIRED HOURS	53-62	855-990

SUPERVISORY MANAGEMENT (N)
Certificate and Associate Degree Option

This program is offered as a basic training program in the technical, conceptual, and human skills necessary to perform effectively the supervisory function, regardless of the specific type of business, industrial, institutional, or governmental setting.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
SUM 100	Getting Ready to Supervise	3	45
SUM 101	Selecting your Subordinates	3	45
SUM 111	Managing People I	3	45
SUM 112	Managing People II	3	45
SUM 113	Managing People III	3	45
SUM 121	Managing Resources I	3	45
SUM 122	Managing Resources II	3	45
SUM 125	Performance Appraisal	3	45
SUM 126	On-the-Job Training	3	45
		27	405

Management Associate Degree Option

Students completing the above certificate program may have the option of completing an Associate Degree in Management by taking the following:

MAR 107	Principles of Marketing	3	45
MAN 106	Business Law	4	60
	And all of the Required Related Courses in the Management Program	34-39	510-585
		41-46	615-690
	TOTAL REQUIRED HOURS	68-73	1020-1095

SUPERVISORY MANAGEMENT

SUM 100 Getting Ready to Supervise (N) . . . . . 3 credits

This is the first in a series of nine courses designed to develop job entry and job upgrading opportunities for positions as supervisor, foreman, leadman, and other management positions in business, industry, and government.

Material covered includes an overview of the supervisory role, the basics of business organization, legal requirements of supervision and decision making.

45 Theory Hrs. 45 Ct. Hrs.

SUM 101 Selecting your Subordinates (N) . . . . . 3 credits

Concentrates on developing the skills needed to post job vacancies, advertise position openings, write job notices, develop interviewing skills, develop selection skills, learn screening techniques, and develop induction and orientation programs.

45 Theory Hrs. 45 Ct. Hrs.

SUM 111 Managing People I (N) . . . . . 3 credits

Human skills development is the objective of this course. Communication techniques, learning the reasons behind attitudes, how they affect production and how to create positive attitudes are emphasized.

Concepts are used to study and apply motivational techniques in work situations. Emphasis is placed up learning how to get people to want to work for you.

45 Theory Hrs. 45 Ct. Hrs.

SUM 112 Managing People II (N) . . . . . 3 credits

Emphasis is placed on how to discipline employees, how to motivate subordinates who are problem workers, and how to recognize and work with groups within the organization. Cases, video tape sessions and other learning tools are used to reinforce people-oriented management concepts and practices.

45 Theory Hrs. 45 Ct. Hrs.

SUM 113 Managing People III (N) . . . . . 3 credits

Course content is centered on the concepts, practices, and strategies of administering union contracts. The student will develop coordination techniques and perform the function through role playing and simulation in handling union labor situations.

Leadership is used as a capstone in the learning process. The role of leadership, the various aspects of leadership, and leadership techniques are emphasized.

45 Theory Hrs. 45 Ct. Hrs.

SUM 121 Managing Resources I (N) . . . . . 3 credits

This course concentrates on the management of activities, work simplification, and time management. Principles and concepts in management activities will be developed as well as techniques of work/job analysis and work simplification.

Time management concentrates on time as it relates to planning, organizing, blocking interruptions, handling decisions, delegation and managing the subordinates' time.

45 Theory Hrs. 45 Ct. Hrs.

SUM 122 Managing Resources II (N) . . . . . 3 credits

Course work centers on cost management, management tools, and management by objectives. Concentrates on finalizing the techniques and skills needed in bringing together resource utilization of time, cost, and activities. Emphasis is placed on the principles, concepts, structure, and application of M.B.O. in the students' work environment.

45 Theory Hrs. 45 Ct. Hrs.

SUM 125 Performance Appraisal (N). . . . . 3 credits

Provides the student with the skills required to properly research, prepare, evaluate, and perform appraisal activities. Attention is given to the need for a formal appraisal process and how to conduct the interview. In addition, personnel administration activities will be discussed with emphasis on wage administration, dehiring techniques, and the role of the personnel departments.

45 Theory Hrs. 45 Ct. Hrs.

SUM 126 On The Job Training (N). . . . . 3 credits

Deals with training requirements in handling day to day responsibilities. Emphasis is on training psychology, techniques used in developing training programs and how to administer the function.

Attention is given to the techniques used in coordinating the training function and to the tools used in measuring the accomplishment of performance objectives. Methods and procedures used in measuring the overall effectiveness of the training program are considered.

45 Theory Hrs. 45 Ct. Hrs.

TRAFFIC AND TRANSPORTATION MANAGEMENT (A)
Associate Degree

This program is designed to prepare students for careers in transportation management and related areas at entry-level positions. The program also prepares students for examinations given by the American Society of Traffic and Transportation.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
TTM 101	Fundamentals of Commercial Transportation I	4	60
TTM 102	Fundamentals of Commercial *Transportation II	4	60
TTM 111	Transportation Regulations I	4	60
TTM 112	Transportation Regulations II	4	60
TTM 121	Economics of Transportation I	2	30
TTM 122	Economics of Transportation II	2	30
TTM 131	Transportation Management I	2	30
TTM 132	Transportation Management II	2	30
		24	360

Required Related Courses

BUS 110	Business Mathematics	3	45
BUS 136	Business Communications Applications	3	45
ECO 120	Labor Management Relations I	2	30
ENG 131	Business Communications Fundamentals	3	45
MAN 105	Introduction to Business	3	45
MAN 106	Business Law	4	60
MAN 115	Principles of Mangement	3	45
MAR 107	Principles of Marketing	3	45
	*Transportation Electives	6-12	90-180
	*Mathematics Elective	3	45
	*English Elective	3	45
	*Ethnic Studies Elective	3	45
		39-45	585-675
	TOTAL REQUIRED HOURS	63-69	945-1035

* Electives chosen must have approval of advisor.

TRAFFIC AND TRANSPORTATION MANAGEMENT

TTM 101 Fundamentals of Commercial Transportation I . . . . . 4 credits
A beginning course in the study of the U.S. Transportation system. The course is designed to acquaint the student with the why and how we manage transportation, the history of transportation regulation and other government functions; freight classification; the domestic bill of lading; rates; routing; packaging; loading; materials handling; freight claims; distribution and warehousing.
60 Theory Hrs. 60 Ct. Hrs.

TTM 102 Fundamentals of Commercial Transportation II . . . . . 4 credits
Deals with contract and private motor carriage, expediting and tracing, detention charges, demurrage, siding and weight agreements, organizing, operating and equipping a traffic department, data processing in transportation, U.S. government traffic, international shipments, the transportation of hazardous materials, and the ocean bill of lading contract.
60 Theory Hrs. 60 Ct. Hrs.

TTM 115 Freight Claims . . . . . 2 credits
This course is designed to further student understanding in the processing and management of freight claims and claim prevention. Course content includes case work in legal principles relating to claim rules and practices.
30 Theory Hrs. 30 Ct. Hrs.

TTM 116 Basics in Air Cargo . . . . . 2 credits
A practical course in the basics of the developing field of air cargo. Topics include air freight rates, tariff rules, regulations and hazardous articles. Course will also cover domestic and international cargo operations, marketing and total cost concepts.
30 Theory Hrs. 30 Ct. Hrs.

TTM 141 Management Tools and Concepts I . . . . . 4 credits
This course is designed to afford the student an opportunity to relate general management concepts to the problems of transportation, traffic and physical distribution management with an emphasis on accounting and law.
60 Theory Hrs. 60 Ct. Hrs.

TTM 142 Management Tools and Concepts II . . . . . 4 credits
A continuation of the first course in Management Tools and Concepts with emphasis on marketing and management concepts.
60 Theory Hrs. 60 Ct. Hrs.

TTM 151 Freight Rates I . . . . . 2 credits
Introduction to freight rates and tariffs beginning with parcel post, U.P.S., express and air freight forwarders. This will be followed by a study of the national motor freight classification and related work problems, leading into motor carrier tariff procedures, rules and interpretation.
30 Theory Hrs. 30 Ct. Hrs.

TTM 152 Freight Rates II . . . . . 2 credits
Pre-requisite: 1st semester or working knowledge of motor classification and tariffs.
A continuation of work problems involving motor tariffs of different bureaus covering a variety of situations.
30 Theory Hrs. 30 Ct. Hrs.

TTM 161 Techniques of Warehousing . . . . . 2 credits
A workshop presentation designed for those interested in, or engaged in the area of physical distribution and aspiring to move into management. Includes a brief history of warehousing, (1) its development as an integral segment of the distribution function, (2) types of warehouses, and (3) an outline of warehouse layout and physical handling methods.
30 Theory Hrs. 30 Ct. Hrs.

TTM 201 International Trade — Exports . . . . . 2 credits
A comprehensive study of doing business overseas. Course includes geography review, methods of locating and servicing markets, documentation workshop and transportation methods and rates, case problems from receipt of inquiry to receipt of order by overseas buyer.
30 Theory Hrs. 30 Ct. Hrs.

TTM 202 International Trade — Imports . . . . . 2 credits
This course is designed to acquaint the student with transportation and related matters for international import freight movement.
30 Theory Hrs. 30 Ct. Hrs.

TTM 211 Economics of Transportation I . . . . . 2 credits
An in depth study of transportation economics. Specific topics cover the development of transportation systems, theory of pricing, cost structures, and rate making.
30 Theory Hrs. 30 Ct. Hrs.

TTM 212 Economics of Transportation II ..... 2 credits
A study of the competition between modes, transportation regulations, finance and problems of transportation policies.
30 Theory Hrs. 30 Ct. Hrs.

TTM 221 Transportation Regulations I ..... 4 credits
An advanced study course designed to prepare students for admission to practice before the Interstate Commerce Commission in regulation areas. A study of the first four parts of the Interstate Commerce Act.
60 Theory Hrs. 60 Ct. Hrs.

TTM 222 Transportation Regulations II ..... 4 credits
This course will focus on court decisions, the rules of practice before the Interstate Commerce Commission and the code of ethics.
60 Theory Hrs. 60 Ct. Hrs.

TTM 231 Transportation Management I ..... 2 credits
An analysis of the modern transportation manager's role within the complex American transportation system. Emphasis is on identification of the competing forces within that system — private vs. for-hire transportation, interstate vs. intrastate transportation, market forces vs. regulatory pressures, etc.
30 Theory Hrs. 30 Ct. Hrs.

TTM 232 Transportation Management II ..... 2 credits
A continuing in-depth study of the factors surrounding modern transportation management. Narrows the issues explored in Transportation Management I, e.g. by analyzing specific differences among different modes of transport.
30 Theory Hrs. 30 Ct. Hrs.

WORD PROCESSING TYPING (N R)
Certificate

This program is designed to prepare students for entry-level positions and/or career advancement in businesses, governmental agencies and other institutions which employ persons in structured word processing centers.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ACC 109	Bookkeeping and Accounting	3	45
BSI	Business Simulation and Internship	1-10	15-150
BUS 135	Business Correspondence	2	30
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
SEC 105	Filing and Records Control	2	30
SEC 116	Magnetic Typewriting (Memory)	3	45
SEC 130	Machine Transcription	4	60
SEC 200	Office Procedures		
OR	SEC 205 Office Simulation		
OR	BUS 297 Cooperative Work Experience	3	45
		26-35	420-585

Required Related Courses

ENG 131	Business Communications Fundamentals	3	45
	TOTAL REQUIRED HOURS	29-38	465-630

DIVISION OF HEALTH OCCUPATIONS

Where a program does not indicate the campus by the key A, N, or R, we would suggest you call the campus of your choice for information.

DENTAL ASSISTING (N)

Associate Degree

The program is designed to prepare students for employment in general and specialized practice dental offices. Graduates of the program are eligible to take the examination for certification.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DEA 100	Orientation to Dental Assisting	2	30
DEA 105	Introduction to Dental Operatory Procedures	3	45
DEA 106	Science of Dental Materials	3	60
DEA 107	Dental Science	2	30
DEA 108	Dental Chairside Procedures I	2	45
DEA 109	Applied Science of Dental Materials	3	60
DEA 110	Dental Office Bookkeeping	3	60
DEA 115	Odontology	4	75
DEA 200	Dental Roentgenology	4	75
DEA 205	Dental Chairside Procedures II	4	90
DEA 206	Emergency Measures for Dental Assistants	1	15
DEA 207	Pharmacology for Dental Assistants	1	15
DEA 208	Advanced Laboratory Procedures	2	45
DEA 209	Advanced Operatory Procedures	3	60
DEA 210	Clinical Practicum	10	450
DEA 215	Clinical Review	2	23
DEA 216	Dental Office Management	2	45
		51	1223

Required Related Courses

BIO 111	Human Anatomy and Physiology I	4	90
	English Elective (required)	2	30
BIO 112	Human Anatomy and Physiology II	4	90
DIT 108	Nutrition for Health Occupations	3	45
SEC 101	Typewriting I	4	75
BIO 102	Microbiology for Dental Assistants	1	30
	Psychology Elective (Required)	2	30
		20	390
	TOTAL REQUIRED HOURS	71	1613

Additional Major Courses

DEA 225	Rubber Cup Pumice Prophylaxis	3	60
DEA 226	Placing and Finishing Amalgam and Composite Restorations	4	75
DEA 227	Oral Surgery Assisting	2	30
DEA 228	Hospital Surgical Procedures	3	45
DEA 229	Minor Dental Laboratory Repairs in Acrylics	2	30
DEA 230	Office Management and Supervision	2	30
DEA 235	Preventive Therapy I	1	15
DEA 236	Preventive Therapy Counseling II	1	15

DENTAL ASSISTING (N)

DEA 100 Orientation to Dental Assisting . . . . . 2 cr. hrs.
An overview of dentistry and the role of the Certified Dental Assistant in relationship to other members of the dental health team. A brief history of the profession, code of ethics, jurisprudence and legal implications also included.
30 hrs. theory — 30 ct. hrs.

DEA 105 Introduction to Dental Operatory Procedures . . . . . 3 cr. hrs.
An introduction to the basic responsibilities of the chairside dental assistant. Basic terminology, identification, care and maintenance of equipment, the prevention control program and off campus supervised observation of dental facilities.
45 hrs. theory — 45 ct. hrs.

DEA 106 Science of Dental Materials . . . . . 3 cr. hrs.
Chemical properties and uses of dental materials and solutions. Manipulation of impression materials and gypsum products are included.
15 hrs. theory - 45 hrs. lab — 60 ct. hrs.

DEA 107 Dental Science . . . . . 2 cr. hrs.
Prerequisite: BIO 111.
This course covers oral anatomy and physiology, microscopic anatomy, pathology and bacteriology, physiology of eating and breathing, oral structure and terminology.
30 hrs. theory — 30 ct. hrs.

DEA 108 Dental Chairside Procedures I . . . . . 2 cr. hrs.
Prerequisite: DEA 105.
An introduction to the identification and use of dental instruments in general dentistry, operation of equipment in the dental operatory, assisting in four handed dentistry, and sterilization techniques.
45 hrs. lab — 45 ct. hrs.

DEA 109 Applied Science of Dental Materials. . . . . 3 cr. hrs.
Prerequisite: DEA 106.
Chemical properties and manipulation of restorative materials.
15 hrs. theory - 45 hrs. lab — 60 ct. hrs.

DEA 110 Dental Office Bookkeeping . . . . . 3 cr. hrs.
Prerequisite: DEA 100, DEA 105
Basic bookkeeping for accounts receivable, accounts payable, payroll, taxes, filing systems. Basic math background essential.
15 hrs. theory — 45 hrs. lab — 60 ct. hrs.

DEA 115 Odontology . . . . . 4 cr. hrs.
Prerequisite: DEA 100, DEA 105.
A course in descriptive anatomy of teeth, i.e., the external form and relationship of teeth. Laboratory experience in the preparation of a three dimensional record of each tooth is included. This course prepares the student for the expanded duty course area of packing and carving of amalgam and composite restorations.
30 hrs. theory - 45 hrs. lab — 75 ct. hrs.

DEA 200 Dental Roentgenology . . . . . 4 cr. hrs.
Prerequisite: DEA 107.
Principles, practices, and safety precautions in the operation of all types of dental x-ray units are studied. Various exposure techniques of intra oral and extra oral radiographs, will be practiced.
30 hrs. theory - 45 hrs. lab 75 ct. hrs.

DEA 205 Dental Chairside Procedures II . . . . . 4 cr. hrs.
Prerequisites: DEA 105, DEA 108.
A continuation of DEA 108. A further study of instruments, their identification, with concentration on use in specialty practices chairside treatment sequences. The student will prepare and present a table clinic, and counsel first year students in preventive dental care.
90 hrs. lab 90 ct. hrs.

DEA 206 Emergency Measures for Dental Assistants . . . . . 1 cr. hr.
Prerequisites: BIO 112, DEA 107.
A discussion of physiologic processes relevant to common dental emergency situations and the planning and immediate response measures required by those emergencies.
15 hrs. theory 15 ct. hrs.

DEA 207 Pharmacology for Dental Assistants. . . . . 1 cr. hr.
Prerequisites: BIO 112, DEA 107.
An overview of pharmacologic agents used in dental practice. Drug therapy measures for emergency situations included.
15 hrs. theory 15 ct. hrs.

DEA 208 Advanced Laboratory Procedures. . . . . 2 cr. hrs.
Prerequisites: DEA 109, DEA 205.
Student are given opportunity to put together previous course information and manipulation of materials to construct orthodontic space maintainers, temporary crowns and bridges, personalized trays and take impressions out of various materials.
45 hrs. lab 45 ct. hrs.

DEA 209 Advanced Operatory Procedures . . . . . 3 cr. hrs.
Prerequisite: DEA 205.
Pumice prophylaxis, topical fluoride application and polishing amalgam restorations are covered in this class, placing and finishing of amalgam and composite restorations in typodents and prepared models.
15 hrs. theory - 45 hrs. lab 60 ct. hrs.

DEA 210 Clinical Practicum . . . . . 10 cr. hrs.
Prerequisites: DEA 205.
This course provides an opportunity for the students to apply their knowledge and further their skills, essential for employment as Dental Assistants. Students are assigned to dental offices and clinics for this experience.
450 hrs. Clinical Practicum 450 ct. hrs.

DEA 215 Clinical Review. . . . . 2 cr. hrs.
Prerequisite: Concurrent enrollment in DEA 210.
Feedback and class discussion of clinical experiences encountered the previous week. Evaluation of dental assisting techniques and improvements of skills.
23 hrs. lab 23 ct. hrs.

DEA 216 Dental Office Management . . . . . 2 cr. hrs.
Prerequisites: DEA 110, SEC 101
Appointment control, treatment and case history planning, insurance records, recall and inventory.
45 hrs. lab 45 ct. hrs.

DEA 225 Rubber Cup Pumice Prophylaxis . . . . . 3 cr. hrs.
Principles of technique for rubber cup polishing with use of disclosing agents, fluoride treatments, auxiliary plaque control measures and care of dental appliances.
15 hrs. theory - 45 hrs. lab 60 ct. hrs.

DEA 226 Placing and Finishing Amalgam and Composite Restorations . . . . . 4 cr. hrs.
Acorde Program presented for Class I through Class V placements, finishing and polishing of restoration material using Rubber Dam techniques.
30 hrs. theory - 45 hrs. lab 75 ct. hrs.

DEA 227 Oral Surgery Assisting. . . . . 2 cr. hrs.
Oral Surgery Assisting in private practice. Subject material includes pre-medications, drug commonly used, levels of anesthesia, instrumentation, transfer methods and zones, sterilization procedures, suture removal, post op care, and emergency measures as they relate to oral surgery patients.
30 hrs. theory 30 ct. hrs.

DEA 228 Hospital Surgical Procedures for Dental Assisting . . . . . 3 cr. hrs.
A course to familiarize the private practice auxiliary with general hospital procedures including, record keeping, scrub technique, gowning and gloving, O.R. equipment and set-ups. Technical information on various dental procedures presented to differentiate instrument set-ups and sequencing of surgical assisting procedures.
15 hrs. theory - 30 hrs. lab 45 ct. hrs.

DEA 229 Minor Dental Laboratory Repairs in Acrylics . . . . . 2 cr. hrs.
Broken retainers, cracked dentures, replacement of broken tooth in denture will be repaired, mouth guards, temporary crowns and bridges will be constructed.
30 hrs. theory 30 ct. hrs.

DEA 230 Office Management and Supervision . . . . . 2 cr. hrs.
Course includes personnel management, interviews and hiring techniques, financial record responsibilities, inventory controls, time and motion studies, effective delegation of duties and utilization of equipment and personnel.
30 hrs. theory 30 ct. hrs.

DEA 235 Preventive Therapy I. . . . . 1 cr. hr.
Designed to provide the dental assistant with the skills and motivation necessary to apply the principles of preventive dentistry to his own oral cavity.
15 hrs. theory 15 ct. hrs.

DEA 236 Preventive Therapy Counseling II. . . . . 1 cr. hr.
Prerequisite: DEA 235 or equivalent.
Designed to provide the dental assistant with the skills necessary to become a preventive therapist in a dental facility. The course will include patient motivation techniques, plaque removal aids and nutrition counseling.
15 hrs. theory 15 ct. hrs.

DIAGNOSTIC RADIOLOGIC TECHNOLOGY (A) (X-RAY)
Associate Degree

Upon completion of this program, the graduate will be eligible to write the certification examination given by the American Registry of Radiologic Technologists.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	15
HOC 106	Basic Patient Care	2	30
RAT 100	Radiographic Technique I	3	45
RAT 105	Radiographic Positioning I	3	45
RAT 106	Clinical Laboratory Experience I	5	120
RAT 107	Radiographic Technique II	3	45
RAT 108	Radiographic Positioning II	3	45
RAT 109	Radiographic Physics Technque	3	45
RAT 110	Clinical Laboratory Experience II	8	180
RAT 115	Radiographic Positioning III	3	45
RAT 116	Clinical Practicum I	5	240
RAT 200	Survey of Medical & Surgical Diseases	2	30
RAT 205	Special Procedures and Techniques	3	45
RAT 206	Clinical Practicum II	11	480
RAT 207	Radiographic Technique II	3	45
RAT 208	Clinical Practicum III	11	480
RAT 209	Registry Review	3	45
RAT 210	Clinical Practicum IV	11	480
		80	2415

Required Related Courses

MAT 106	Introduction to Math	3	45
SCI 101	Science for Health Occupations	4	75
PHY 105	Topics in the Physical Sciences	3	75
	English Elective	3	45
	Psychology Elective	2	30
		15	270
	TOTAL REQUIRED HOURS	95	2685

DIAGNOSTIC RADIOLOGIC TECHNOLOGY (A)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms reports and therapy requests to his field.
15 hrs. theory — 15 ct. hrs.

HOC 106 Basic Patient Care . . . . . 2 cr. hrs.
Focuses on the basic concepts and technical skills common to all health care deliverers. Ethical and legal responsibilities, basic techniques necessary to meet care needs and emergency measures are included.
30 hrs. theory — 30 ct. hrs.

RAT 100 Radiographic Technique I . . . . . 3 cr. hrs.
Pre-requisite: Admission to the Radiologic Technology Program or permission of instructor.
Co-requisites: RAT 105 and RAT 106.
Basic orientation course for diagnostic students. Includes a brief history of radiation opportunities and advancement in the field, general radiographic technique principles, equipment, and accessories; latent image formation, manual and automatic processing fundamentals; radiation protection.
45 hrs. theory — 45 ct. hrs.

RAT 105 Radiographic Positioning I . . . . . 3 cr. hrs.
Pre-requisites: Admission to the Radiologic Technology Program or permission of instructor.
Co-requisites: RAT 100, RAT 106, SCI 101.
An introduction to topographic anatomy, positioning terminology and beginning principles in radiography positioning. Includes use of the energized lab and phantoms, plus radiographic techniques for those positions.
45 hrs. theory — 45 ct. hrs.

RAT 106 Clinical Laboratory Experience I . . . . . 5 cr. hrs.
Pre-requisite: Admission to Radiologic Technology Program or permission of instructor.
Co-requisite: RAT 100, RAT 105.
Introduction to clinical laboratory education which will enable student to begin practice of radiographic principles and positioning on patients under the direct supervision of registered technologists.
120 laboratory hrs. — 120 ct. hrs.

RAT 108 Radiographic Positioning II . . . . . 3 cr. hrs.
Pre-requisites: RAT 105, RAT 106, SCI 101.
Co-requisite: RAT 109.
Additional radiographic positioning skills and techniques are introduced and mastered.
45 hrs. laboratory — 45 ct. hrs.

RAT 109 Radiographic Physics Technique . . . . . 3 cr. hrs.
Pre-requisites: RAT 100, RAT 105, SCI 101, permission of instructor.
Co-requisite: RAT 108.
Specialized information on x-ray equipment and the theoretical background. Topics are: fundamentals of electricity and radiation physics and basic principles underlying the operation of x-ray equipment and auxilary devices related to exposure techniques.
45 hrs. laboratory — 45 ct. hrs.

RAT 110 Clinical Laboratory Experience . . . . . 8 cr. hrs.
Pre-requisites: RAT 100, RAT 105, RAT 106, SCI 101, permission of instructor.
Co-requisite: RAT 108.
Student will gain experience and develop skills in performing radiographic examinations under the direct supervision of registered technologists.
180 hrs. laboratory — 180 ct. hrs.

RAT 115 Radiographic Positioning III . . . . . 3 cr. hrs.
Pre-requisites: RAT 108, permission of instructor.
Co-requisites: RAT 116.
In-depth treatment of concepts and principles of radiographic positioning.
45 hrs. theory — 45 ct. hrs.

RAT 116 Clinical Practicum I . . . . . 5 cr. hrs.
Pre-requisite: RAT 108.
Co-requisites: RAT 115.
Student gains experience in advanced techniques and positioning skills. Included are classes in film critique given at these hospitals.
240 hrs. laboratory — 240 ct. hrs.

RAT 200 Survey of Medical and Surgical Diseases ..... 2 cr. hrs.

Pre-requisites: HOC 100, acceptance to Radiologic Technology Program or permission of instructor.

Basic causes of diseases, changes that occur in disease and trauma, and related diagnostic and therapeutic measures. Discussion, case examples will be related in the students particular occupational interest.

30 hrs. theory 30 ct. hrs.

RAT 205 Special Procedures and Techniques ..... 3 cr. hrs.

Pre-requisites: RAT 107, permission of instructor.
Co-requisites: RAT 206.

This course covers special radiographic procedures; advanced techniques, radiation therapy, nuclear medicine, and radiation biology.

45 hrs. theory 45 ct. hrs.

RAT 206 Clinical Practicum II..... 11 cr. hrs.

Pre-requisites: RAT 116, permission of instructor.
Co-requisite: RAT 205.

Under the supervision of registered technologists, the student will have the opportunity to perform duties typical of a staff radiologic technologist. Film critique and conferences will be conducted approximately two hours per week in the affiliated hospital during this time.

480 hrs. laboratory 480 ct. hrs.

RAT 207 Radiographic Technique II..... 3 cr. hrs.

Pre-requisite: RAT 205, 206
Co-requisite: RAT 208

An exploration of advanced principles and techniques of radiographic exposure and qualities of a good radiograph.

45 hrs. theory 45 ct. hrs.

RAT 208 Clinical Practicum III ..... 11 cr. hrs.

Pre-requisites: RAT 206, permission of instructor.
Co-requisite: RAT 207.

Student performs more advanced procedures in clinical radiography and fluoroscopy at participating hospitals.

480 hrs. laboratory 480 ct. hrs.

RAT 209 Registry Review..... 3 cr. hrs.

Pre-requisite: RAT 207, permission of instructor.
Co-requisites: RAT 210.

Total review of all course and clinical work in X-Ray Technology in preparation for registry examination given by the American Registry of Radiologic Technologists in cooperation with the Council on Medical Education of the American Medical Association.

45 hrs. theory 45 ct. hrs.

RAT 210 Clinical Practicum IV ..... 11 cr. hrs.

Pre-requisites: RAT 208, permission of instructor.
Co-requisite: RAT 209.

Final course of clinical practicum in Diagnostic Radiologic Technology, in which the student begins to function with a minimal amount of supervision. Emphasis is placed upon the transition from the student to the graduate role.

480 hrs. laboratory 480 ct. hrs.

DIAGNOSTIC ULTRASOUND TECHNOLOGY (A)

Certificate or Associate Degree

(See Health Occupations Division for more information).

MEDICAL OFFICE MANAGEMENT (A)

Certificate Program

Upon completion of this program, the graduate will possess job entry skills for positions in the business component of medical office practice.

Required Major Courses

Course No.	Title	Cr. Hrs.	45
MOM 100	Intro Medical Office Procedures	3	45
MOM 105	Medical Office Bookkeeping and Accounting	3	45
MOM 106	Applied Science for Medical Office Workers	4	60
MOM 107	Insurance Information Methods	3	45
MOM 108	Advanced Medical Office Procedures	3	45
MOM 109	Medical Filing Procedures	1	15
MOM 110	Health Insurance Claim Reporting	3	45
MOM 115	Data Processing for Patient Accounting	3	45
MOM 116	Medical Ethics	1	15
MOM 117	Medical Office Practicum	3	135
		27	495

Required Related Courses

ENG 131	Business Communications	3	45
SEC 101 OR 102	Typing I or II	4	75
BUS 115	Business Math by Machine	4	60
		11	180
		38	675

MEDICAL OFFICE MANAGEMENT (A)

MOM 100 Introduction to Medical Office Procedures ..... 3 cr. hrs.

Pre-requisite: Admission to Medical Office Management Program or permission of instructor.

Introduction to office routines of medical, hospital, dental offices and the problems encountered in the business side of medical office practice. Emphasis is also placed on basic conepts of medical care.

45 Hrs. Theory 45 Ct. Hrs.

MOM 105 Medical Office Bookkeeping and accounting..... 3 cr. hrs.

Pre-requisite: Admission to Medical Office Management Program or permission of instructor.

Basic medical office bookkeeping and accounting routines, accounts receivable, accounts payable, cash disbursements, payroll, bank reconciliation with emphasis on systems that are unique to medical offices.

45 Hrs. Theory 45 Ct Hrs.

MOM 106 Applied Science for Medical Office Workers..... 4 cr. hrs.

Pre-requisites: Admission to the Medical Office Management Program or permission of instructor.

Integration of basic concepts of body structure and functioning with the study of the origin and structure of medical terms.

60 Hrs. Theory 60 Ct. Hrs.

MOM 107 Insurance Information Methods ..... 3 cr. hrs.

Pre-requisites: Admission to the Medical Office Management Program or permission of instructor.

Introduction to insurance claim reporting. Emphasis is placed on generation of simple insurance claim forms from patient charts utilizing ICDA and CRV codes.

45 Hrs. Theory 45 Ct. Hrs.

MOM 108 Advanced Medical Office Procedures . . . 3 cr. hrs.
Pre-requisites: MOM 100 or permission of instructor.
Step by step development of running the business side of a medical practice. Topics will include accounting systems, daily routing and procedures that include appointment blocking, traffic flow, patient charts, billing and collection methods and hospital receivables management. Social and vocational relationships in the work setting will be explored.
45 Hrs. Theory 45 Ct. Hrs.

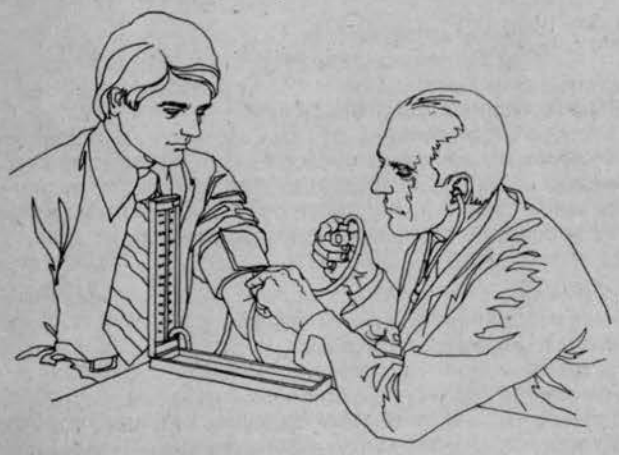
MOM 109 Medical Filing Procedures . . . . . 1 cr. hr.
Pre-requisites: Admission to the Medical Office Management Program or permission of instructor.
Introduction to basic filing principles, medical office filing procedures and systems and medical records development.
15 Hrs. Theory 15 Ct. Hrs.

MOM 110 Health Insurance Claim Reporting . . . . . 3 cr. hrs.
Pre-requisite: Admission to Medical Office Management Program or permission of instructor.
Insurance claim forms initiated from complex problems in patient charts, using ICDA, CRVS, CPI codes with emphasis placed upon the use of medical terms and abbreviations.
45 Hrs. Theory 45 Cr. Hrs.

MOM 115 Data Processing for Patient Accounting. . . . . 3 cr. hrs.
Pre-requisites: Admission to Medical Office Management Program or permission of instructor.
Introduction to preparation of data for patient accounting, reading of computer print-outs and transmission of data from terminal in laboratory to computer center.
30 Hrs. Theory, 15 Hrs. Laboratory 45 Ct. Hrs.

MOM 116 Medical Ethics . . . . . 1 cr. hr.
Pre-requisite: Admission to Medical Office Management program or permission of instructor.
Exploration of various aspects of professional ethics, patient-physician confidentiality, medical licensure, registration and statutory reports.
15 Hrs. Theory 15 Ct. Hrs.

MOM 117 Medical Office Practicum. . . . . 3 cr. hrs.
Pre-requisites: Completion of all first and second semester courses in the Medical Office Management curriculum.
Student placement at a work station related to their occupational objectives. Immediate supervision provided by experienced personnel with general coordination and supervision provided by the program instructor/coordinator.
135 Hrs. Laboratory 135 Ct. Hrs.



NUCLEAR MEDICINE TECHNOLOGY
Certificate or Associate Degree

Upon completion of this program, the graduate will be eligible to write the certifying examination in Nuclear Medicine Technology given by the Nuclear Medicine Technology Certification Board, American Registry of Radiologic Technologists, or the Board of Registry of the American Society of Clinical Pathologists.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	15
HOC 106	Basic Patient Care	2	30
HOC 107	Orientation to Clinical Practicum	1	40
HOC 108	Positioning Techniques	2	30
HOC 109	Radiologic Instrument Maintenance	2	30
RAT 200	Survey of Medical and Surgical Diseases	2	30
NMT 200	Nuc. Med. Tech. Clinical Applications I	1	15
NMT 205	Statistics of Radioactive Counting and Imaging	1	15
NMT 206	Radiation Physics	3	45
NMT 207	Nuclear Medicine Instrumentation	4	60
NMT 208	Nuc. Med. Tech. Practicum I	10	431
NMT 209	Nuc. Med. Tech. Clinical Applications	4	60
NMT 210	Nuc. Med. Tech. Practicum II	9	384
NMT 215	Nuc. Med. Tech. Seminars	3	45
NMT 216	Nuc. Med. Tech. Practicum III	15	672
RTT 215	Radiation Biology and Pathology	2	30
NMT 217	Nuc. Med. Radiopharmaceutical Prep.	4	90
NMT 218	Competitive Radioassay	4	90
		70	2112

Required Related Courses

BIO 111	Human Anatomy and Physiology I	4	90
BIO 112	Human Anatomy and Physiology II	4	90
MAT 121	College Algebra	4	60
CHE 101	Fundamentals of Chemistry I	4	90
PHY 115	Introduction to Medical Physics	4	90
	Psychology Elective	2	30
	English Elective	2	30
		24	480
	TOTAL REQUIRED HOURS	94	2592

NUCLEAR MEDICINE TECHNOLOGY (A)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms, reports and requests to his field.
15 hrs. theory 15 ct. hrs.

HOC 106 Basic Patient Care . . . . . 2 cr. hrs.
Focuses on the basic concepts and technical skills common to all health care deliverers. Ethical and legal responsibilities, basic techniques necessary to meet health care needs, and emergency measures are included.
30 hrs. theory 30 ct. hrs.

HOC 107 Orientation to Clinical Practicum ..... 1 cr. hr.

Pre-requisites: Admission to the Nuclear Medicine Technology, Radiation Therapy Technology or Ultrasound Technology Programs.

An orientation to a Nuclear Medicine, Radiation Therapy or Ultrasound Technology facility designed to acquaint the student with the selected radiologic technology specialty area.

40 hrs. laboratory — 40 ct. hrs.

HOC 108 Positioning Techniques ..... 2 cr. hrs.

Pre-requisites: Admission to the Nuclear Medicine Technology or Radiation Therapy Technology Program.

Introduction to terminology and general principles of positioning, routine positioning and anatomy of the chest, abdomen and skull as related to Nuclear Medicine and Radiation Therapy procedures.

30 hrs. theory — 30 ct. hrs.

HOC 109 Radiologic Instrument Maintenance ..... 2 cr. hrs.

Pre-requisites: Admission to Nuclear Medicine Technology or Radiation Therapy Program or permission of instructor.

Basic electronics of instruments used in the above fields. Course will cover calibration and minor repairs for the same.

30 hrs. theory — 30 ct. hrs.

RAT 200 Survey of Medical and Surgical Diseases ..... 2 cr. hrs.

Pre-requisites: HOC 100, acceptance to Radiologic Technology Program or permission of instructor.

Basic causes of diseases, changes that occur in disease and trauma, and related diagnostic and therapeutic measures. Discussion, case examples will be related in the students particular occupational interest.

30 hrs. theory — 30 ct. hrs.

NMT 200 Nuclear Medicine Technology — Clinical Applications I ..... 1 cr. hr.

Pre-requisite: Admission to the second year of the Nuclear Medicine Technology Program. A basic methodology course designed to introduce the student to the various **in vivo** procedures routinely performed in the Nuclear Medicine Department.

15 hrs. theory — 15 ct. hrs.

NMT 205 Statistics of Radioactive Counting and Imaging ..... 1 cr. hr.

Pre-requisite: Admission to second year of Nuclear Medicine Technology Program.

A study of the statistical analysis associated with the field of Nuclear Medicine Technology. Topics will include Determinate and Indeterminate Errors, Precision, Bias, Accuracy, Gaussion and Poisson Distributions, Standard Deviations, Error Analysis, and Optimum Distribution of counting times.

15 hrs. theory — 15 ct. hrs.

NMT 206 Radiation Physics ..... 3 cr. hrs.

Pre-requisite: Admission to second year of Nuclear Medicine Technology Program.

Application of selected principles of physics to the fields of Nuclear Medicine Technology and Radiation Therapy Technology. Mathematical concepts are discussed as they related to specific areas.

30 hrs. theory — 45 ct. hrs.

NMT 207 Nuclear Medicine Instrumentation ..... 4 cr. hrs.

Pre-requisite: Admission to second year of Nuclear Medicine Technology Program.

Study of radiation units, identification of radionuclides, scintillation spectrometry, operation of detective instruments (Geiger-Mueller) well counter, Rectilinear Scanners, Stationery Imaging Devices, and quality assurance procedures for each.

60 hrs. theory — 60 ct. hrs.

NMT 208 Nuclear Medicine Technology Practicum I ..... 10 cr. hrs.

Pre-requisite: Admission to second year of Nuclear Medicine Technology Program and concurrent registration for NMT 209.

Laboratory course in a clinical nuclear medicine setting. Provides the opportunity to develop skills in the performance of nuclear medicine examinations. Emphasis is placed on operation and use of associated nuclear medicine instrumentation.

431 hrs. laboratory — 431 ct. hrs.

NMT 209 Nuclear Medicine Technology Clinical Applications. ..... 4 cr. hrs.

Pre-requisites: NMT 207 and NMT 208.

Clinical application of radionuclides. Course will include use of radioactive nuclides for thyroid, ferrokinetics, hematology, gastro-intestinal, skeletal, nervous cardiovascular, pulmonary and genitourinary studies.

60 hrs. laboratory — 60 ct. hrs.

NMT 210 Nuclear Medicine Technology Practicum II ..... 9 cr. hrs.

Co-requisite: NMT 215.

Laboratory course in a clinical nuclear medicine setting. Emphasis placed on developing skills in the performance of studies described in Nuclear Medicine Technology Clinical Applications.

384 hrs. laboratory — 384 ct. hrs.

NMT 215 Nuclear Medicine Technology Seminars ..... 3 cr. hrs.

Pre-requisites: Admission to second year of Nuclear Medicine Technology Program and NMT 209 and NMT 210.

This course will provide the student with information related to special procedures in Nuclear Medicine Technology.

45 hrs. theory — 45 ct. hrs.

NMT 216 Nuclear Medicine Technology Practicum III ..... 15 cr. hrs.

Pre-requisites: NMT 202 and NMT 209.

A laboratory course provided for the student in a clinical nuclear medicine setting. Provides the student the opportunity to gain advanced experience in techniques of nuclear medicine procedures and decision making related to the performance of these procedures.

672 hrs. laboratory — 672 ct. hrs.

NMT 217 Nuclear Medicine Radiopharmaceutical Prep. ..... 4 cr. hrs.

Pre-requisites: Admission to the second year of Nuclear Medicine Technology and CHE 101.

Basic principles involved in preparation and use of radiopharmaceuticals emphasized. Topics include radionuclide generators, labeling procedures, sterility and pyrogen testing, radiochemical, and radionuclide purity, regulations nuclide suppliers and associated quality assurance tests.

45 hrs. theory - 45 hrs. laboratory — 90 ct. hrs.

NMT 218 Competitive Radioassay ..... 4 cr. hrs.

Pre-requisite: Admission to second year of the Nuclear Medicine Technology Program.

Information related to the theory, performance and the use of competitive radioassay techniques. Topics will include components of the radioassay system, combination and incubation of assay components, quality assurance procedures and clinical applications.

45 hrs. theory - 45 hrs. laboratory — 90 ct. hrs.

NURSING (A,N)
Certificate or Associate Degree

Nursing as a career includes a variety of employment opportunities and patterns of educational preparation. The nursing program is planned to enable the student to choose the career approach most appropriate to individual goals and needs.
The Graduate of this program is eligible to take the examination for licensure as a Registered Nurse.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	15
NUR 101	Pharmacology I	2	30
NUR 111	Nursing Concepts I	10	180
NUR 112	Nursing Concepts II	14	285
NUR 115	Vocational Relationships	1	15
NUR 201	Pharmacology II	2	30
NUR 211	Comprehensive Nursing I	12	240
NUR 212	Comprehensive Nursing II	14	270
NUR 215	Nursing Trends and Issues	2	30
		58	1095

Required Related Courses

BIO 111	Human Anatomy and Physiology I	4	90
BIO 112	Human Anatomy and Physiology II	4	90
	Advanced Physiology	3	75
BIO 115	Introduction to Microbiology	3	75
ENG 106	Communications for Health Occupations	3	45
PSY 235	Psychology of Human Growth & Development	3	45
		20	420
	TOTAL REQUIRED HOURS	78	1515

After successful completion of the first two semesters, the student will receive a certificate in Practical Nursing and is eligible to take the examination for licensure as a Practical Nurse.

Additional Major Courses

NUR 100	Nursing Skills Laboratory	2-4	45-90
NUR 109	Concentrated Nursing Skills	3-9	105-315
NUR 110	Review of Nursing Concepts	2	30
NUR 120	**Psychosocial Concepts In Nursing**	**2**	**30**
NUR 209	Review of Nursing Principles	2	30
NUR 210	Advanced Nursing Skills	5-15	105-315

NURSING (A,N)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms, reports and therapy requests to his field.
15 hrs. theory — 15 ct. hrs.

NUR 100 Nursing Skills Laboartory . . . . . 2-4 cr. hrs.
Selected laboratory experiences designed to meet individual student needs and to supplement required nursing courses.
45 or 90 hrs. lab — 45 or 90 ct. hrs.

NUR 101 Pharmacology I . . . . . 2 cr. hrs.
Basic course in drugs and drug administration. Student must possess knowledge of fractions and decimals.
30 hrs. theory — 30 ct. hrs.

NUR 109 Concentrated Nursing Skills . . . . . 3-9 cr. hrs.
Pre-requisites: NUR 101, NUR 111, BIO 111.
A laboratory course designed to reinforce basic nursing care skills in the clinical area. Emphasis is placed on organization, priority setting, assessment and confidence building.
15 or 45 hrs. theory - 90 or 270 hrs. lab — 105 or 315 ct. hrs.

NUR 110 Review of Nursing Concepts . . . . . 2 cr. hrs.
A review of basic nursing care concepts to reinforce job entry preparation. A seminar approach is used to adjust the course to specific student needs.
30 hrs. theory — 30 ct. hrs.

NUR 111 Nursing Concepts I . . . . . 10 cr. hrs.
Co-requisites: HOC 100, NUR 101, BIO 111.
An introductory course in the fundamentals of patient care which incorporates mental health, cultural concepts, and medical-surgical nursing knowledge basic to the care of the patient. Nursing care skills are stressed throughout the course.
90 hrs. theory - 90 hours lab — 180 ct. hrs.

NUR 112 Nursing Concepts II . . . . . 14 cr. hrs.
Prerequisite: NUR 111.
Co-requisites: BIO 112, NUR 115
Emphasis in this course is placed on health maintenance and common illnesses occurring at various developmental cycles. Focus is placed on the child-bearing family, care of the child from newborn to adolescence and common illnesses of the young adult.
60 hrs. theory - 225 hours lab — 285 ct. hrs.

NUR 115 Vocational Relationships . . . . . 1 cr. hr.
Pre-requisite: NUR 111.
CO-requisite: NUR 112.
An exploration of the changing trends in nursing with emphasis on the specific legal and ethical implications for the practical nurse. Focus is on role of practical nurse as a health team member in the community.
15 hrs. theory — 15 ct. hrs.

NUR 120 Psychosocial Concepts in Nursing . . . . . 2 cr. hrs.
A basic course concerned with theory and skills of therapeutic communication, interviewing, personality structure, growth and development, anxiety, defense mechanism, concepts of body image, loss, grief, sexuality, aging and common patterns of behavior in response to stress. Knowledge of these concepts is required for students applying for advanced standing in the Nursing Program.
30 hrs. theory — 30 ct. hrs.

NUR 201 Pharmacology II . . . . . 2 cr. hrs.
Pre-requisites: NUR 101, NUR 112, BIO 112, Adv. Physiology (may be taken concurrently)
Builds on basic pharmacology course. Emphasis is on nurse's role in identifying therapeutic and toxic effects of drugs on body systems and related nursing action.
30 hrs. theory — 30 ct. hrs.

NUR 209 Review of Nursing Principles . . . . . 2 cr. hrs.
Prerequisite: NUR 115 or Instructor's permission.
Review and synthesis of nursing theory preparing the student for job readiness.
30 hrs. theory 30 ct. hrs.

NUR 210 Advanced Nursing Skills. . . . . 5-15 cr. hrs.
Prerequisite: Instructor's Permission.
This is a laboratory course of advanced nursing skill development designed to follow the basic courses of the nursing program. Students may request this course to gain additional skills in team leading or an introduction to more complex or specialty areas of nursing practice.
15 or 45 hrs. theory - 90 or 270 hrs. lab 105-315 ct. hrs.

NUR 211 Comprehensive Nursing I . . . . . 12 cr. hrs.
Pre-requisite: NUR 112, ENG 106 or equivalent NUR 115
Co-requisites: Adv. Physiology, NUR 201, PSY 235
An advanced nursing course primarily concerned with illnesses common at varying age levels of the developmental cycle. Nursing intervention related to child-bearing family, children and common medical-surgical conditions is stressed.
60 hrs. theory - 180 hours lab 240 ct. hrs.

NUR 212 Comprehensive Nursing II. . . . . 14 cr. hrs.
PRE-requisites: NUR 211, NUR 201. Adv. Physiology
Co-requisites: BIO 115, NUR 215
Designed to deal with the cultural, psychological and health maintenance needs of the adult. The course deals with common psychiatric and medical-surgical problems of patients.
90 hrs. theory - 180 hours lab 270 ct. hrs.

NUR 215 Nursing Trends and Issues . . . . . 2 cr. hrs.
Focus on current issues related to legislation, licensure, professional organization and the relationship of nursing history to current trends in delivery of health care.
30 hrs. theory 30 ct. hrs.

CONTINUING EDUCATION FOR NURSES (A,N,R)
Certificate Program

Continuing education will be offered, as indicated by community needs, to augment the knowledge and skills of practitioners in nursing. These courses will enable the practitioner to acquire an increased depth of knowledge in basic practice areas, an awareness of progress, developments and new therapy measures, and to meet requirements for Continuing Education Units.

Course No.	Title	Cr. Hrs.	Ct. Hrs.
NCE 200	Registered Nurse Refresher Course	13	240
NCE 206	Applied Physiology for Nurses	4	60
NCE 207	Acute Care of the Med. Surg. Patient	3	45
NCE 208	Basic EKG Interpretation	2	30
NCE 209	Clinical Interpretation of Lab Test	2	30
NCE 210	Physical Assessment of Adult	3	45
NCE 215	Cardiopulmonary Resuscitation	1	15
NCE 216	Orthopedic and Neurological Nursing	2	30
NCE 217	Pharmacodynamics and Drug Interaction	3	45
NCE 218	Legal Aspects of Charting	1	15
NCE 219	Nursing Leadership and Management	2	30
NCE 220	Legal Aspects of Nursing	2	30
NCE 225	Body Mechanics for Nurses	1	15
NCE 226	I.V. Therapy	1	15
NCE 227	Communications Skills for Nurses	1	15
NCE 228	Hyperalimentation	1	15
NCE 229	Fluids and Electrolytes	1	15
NCE 230	Emergency Nursing Assessment	1	15
NCE 235	Emergency Trauma Nursing	2	30
NCE 236	Physical Assessment of Child	2	30
NCE 237	Basic Spanish for Nurses	3	45
NCE 238	Interviewing Techniques for Nurses	2	30
NCE 239	Blood Gases	1	15
NCE 240	Assertiveness for Nurses	2	30
NCE 245	Intermediate EKG Interpretation	2	30
NCE 246	Advanced EKG Interpretation	2	30
NCE 247	Intro. to Critical Care	2	30
NCE 248	Psychiatric Nursing Update	3	45
NCE 249	Sexual Aspects of Patient Care	2	30
NCE 250	Tubes and Intubation	1	15
NCE 255	Problem Oriented Medical Records	1	15
NCE 256	Interpretation of Vital Signs	1	15
NCE 257	Selected Emergency Care	1	15
NCE 258	Ethnic Components of Nursing Care	2	30
NCE 259	The Aging Process	2	30

CONTINUING EDUCATION FOR NURSES (A,N,R)

NCE 200 Registered Nurse Refresher Course . . . . . 13 cr. hrs.
Classroom instruction includes nursing knowledge and skills basic to all areas of nursing practice: current trends in health care, pharmacology, fluid and electrolytes, intravenous therapy, cariopulmonary resuscitation and legal aspects. Emphasis on patient assessment and nursing intervention. Hospital experience will consist of patient care and observation in the areas of student's choice when possible.
105 hrs. theory — 135 hrs. lab 240 ct. hrs.

NCE 206 Applied Physiology for Nurses . . . . . 4 cr. hrs.
Study of physiology and pathophysiology — an integrated approach to human disease with emphasis on nursing implications.
60 hrs. theory 60 ct. hrs.

NCE 207 Acute Care of the Med. Surg. Patient . . . . . 3 cr. hrs.
Identifies new concepts in the assessment and responsibilities of the nurse in the care of the acute medical surgical patient. To include commonly occuring disease processes.
45 hrs. theory 45 ct. hrs.

NCE 208 Basic EKG Interpretation . . . . . 2 cr. hrs.
Anatomy and physiology of the heart, conduction system, normal and abnormal stimuli of cardiac muscle, cardiac drugs and recognition of arrhythmias for interpretation telemetry.
30 hrs. theory 30 ct. hrs.

NCE 209 Clinical Interpretation of Laboratory Test . . . . . 2 cr. hrs.
New developments in laboratory test and analysis. Emphasis on nurses' responsibilities in interpreting and evaluating laboratory tests to improve patient care.
30 hrs. theory 30 ct. hrs.

NCE 210 Physical Assessment of the Adult . . . . . 3 cr. hrs.
Study and practice of techniques that are necessary in history taking and physically examining an adult patient for nursing care assessments.
45 hrs. theory 45 ct. hrs.

NCE 215 Cardiopulmonary Resuscitation . . . . . 1 cr. hr.
Normal heart physiology and basic EKG followed by practice of cardiopulmonary resuscitation. Based on AMA & AHA Standards.
15 hrs. theory 15 ct. hrs.

NCE 216 Orthopedic and Neurological Nursing . . . . . 2 cr. hrs.
New developments and expanded skills in the assessment of orthopedic and neurological problems. Emphasis will be on patient needs — alleviation of pain, correct positioning of injured or surgically repaired extremities, prevention of complications and rehabilitation.
30 hrs. theory 30 ct. hrs.

NCE 217 Pharmacodynamics and Drug Interaction . . . . . 3 cr. hrs.
Study of the biochemical and physiologic effects of drugs and mechanism of action and interaction. Enables the nurse to understand drug interaction, and to increase observation skills and interpretation of drug response in patient care.
45 hrs. theory 45 ct. hrs.

NCE 218 Legal Aspects of Charting . . . . . 1 cr. hr.
Basic concepts of charting. Emphasis placed on observations, patient response to care and legal aspects of the nurse's record. A practice charting session and evaluation of charting in relation to various patient situations will be included.
15 hrs. theory 15 ct. hrs.

NCE 219 Nursing Leadership and Management . . . . . 2 cr. hrs.
Directed toward helping the professional nurse to understand the responsibilities in becoming a leader and to provide a simple guide to the various ways in which he/she can exercise leadership in the management of patient care.
30 hrs. theory 30 ct. hrs.

NCE 220 Legal Aspects of Nursing . . . . . 2 cr. hrs.
Introduction to the law and application to nursing practice.
30 hrs. theory 30 ct. hrs.

NCE 225 Body Mechanics for Nurses . . . . . 1 cr. hr.
Fundamental principles, protection of the lowback, rules of body alignment in activity, specific motions and postures, specific application to hospital activities.
15 hrs. theory 15 ct. hrs.

NCE 226 I.V. Therapy . . . . . 1 cr. hr.
Basic venipuncture techniques, factors involved in vein selection, psychological implications, complications and nursing measures.

NCE 227 Communication Skills for Nurses . . . . . 1 cr. hr.
Therapeutic listening, message-sending and problem solving techniques.
15 hrs. theory 15 ct. hrs.

NCE 228 Hyperalimentation . . . . . 1 cr. hr.
Presents the facts of parenteral hyperalimentation as a therapeutic adjunct in the treatment or prevention of negative nitrogen balance. Emphasis on implications of nursing care to promote maximum therapeutic benefit to the patient.
15 hrs. theory 15 ct. hrs.

NCE 229 Fluid and Electrolytes 1 cr. hr.
Identifies the principles of fluids and electrolytes and their application to patient care. To include causative factors of imbalances, recognition of signs and symptoms, laboratory tests, treatment and nurse's responsibilities.
15 hrs. theory 15 ct. hrs.

NCE 230 Emergency Nursing Assessment . . . . . 1 cr. hr.
Basic patient assessment in an emergency situation.
15 hrs. theory 15 ct. hrs.

NCE 235 Emergency Trauma Nursing . . . . . 2 cr. hrs.
Acute care of the patient from treatment at the scene of an accident to management of emergencies that occur within the hospital setting. Patient assessment, therapeutic needs, diagnostic procedures and treatment techniques.
30 hrs. theory 30 ct. hrs.

NCE 236 Physical Assessment of the Child . . . . . 2 cr. hrs.
Study and practice of skills required by the nurse in collecting data for nursing assessment. To include interviewing, observation, and physical appraisal skills of the infant through adolescents.
30 hrs. theory 30 ct. hrs.

NCE 237 Basic Spanish for Nurses . . . . . 3 cr. hrs.
To meet the immediate needs of the health worker in communicating with the Spanish speaking patient. Includes vocabulary, grammar and idioms. Previous knowledge of Spanish is **not** necessary.
45 hrs. theory 45 ct. hrs.

NCE 238 Interviewing Techniques for Nurses . . . . . 2 cr. hrs.
Designed for nurses in hospitals and all health care agencies. Includes the role of the nurse interviewer, principles of patient interviewing and evaluation by the nurse interviewer. This is the basis for problem oriented patient care.
30 hrs. theory 30 ct. hrs.

NCE 239 Blood Gases . . . . . 1 cr. hr.
Four primary acid-base balance problems, interpretation of blood gas test, signs, symptoms and measure to help the nurse plan effective patient care.
15 hrs. theory 15 ct. hrs.

NCE 240 Assertiveness for Nurses . . . . . 2 cr. hrs.
Seminar for nurses to expand positive attitudes and actions, applicable for personal and professional growth. Includes communication skills, time utilization, creativity, leadership, and goal setting. Be assertive!!
30 hrs. theory 30 ct. hrs.

NCE 245 Intermediate EKG Interpretation . . . . . 2 cr. hrs.
Continuation of basic EKG interpretation. To include twelve (12) lead interpretation.
30 hrs. theory 30 ct. hrs.

NCE 246 Advanced EKG Interpretation . . . . . 2 cr. hrs.
An in-depth analysis of various components of electrocardiogram and their clinical significance.
30 hrs. theory 30 ct. hrs.

NCE 247 Introduction to Critical Care . . . . . 2 cr. hrs.
An introduction to the care of the critically ill patient to include the technical, psychological and physical aspects of critical care nursing.
30 hrs. theory 30 ct. hrs.

NCE 248 Psychiatric Nursing Update . . . . . 3 cr. hrs.
Designed to provide the nurse with a broad overview of the new dimensions in psychiatry and an update in psychiatric mental health nursing. Attention will be paid to the community mental health centers and their functions.
45 hrs. theory 45 ct. hrs.

NCE 249 Sexual Aspects of Patient Care . . . . . 2 cr. hrs.
Theories and attitudes of human sexuality. Sexual development, sexual maturity and acceptance of ourselves as sexual beings. Emphasis on nursing implications regarding physiological, behavioral and cultural aspects.
30 hrs. theory 30 ct. hrs.

NCE 250 Tubes and Intubation. . . . . 1 cr. hr.
Identification, insertion and maintenance of tubes used in every aspect of patient care. This course will **not** teach one how to do tracheal intubation.
15 hrs. theory 15 ct. hrs.

NCE 255 Problem Oriented Medical Records . . . . . 1 cr. hr.
Philosophy and mechanics of POMR. Participants will learn to identify and describe patient problems, organize and record both nursing care plans and interventions using the problem-oriented record.
15 hrs. theory 15 ct. hrs.

NCE 256 Interpretation of Vital Signs . . . . . 1 cr. hr.
An in-depth look at vital signs; what each means in relation to the other; and what the abnormals indicate in relation to different disease processes. This is more than basic TPR.
15 hrs. theory 15 ct. hrs.

NCE 257 Selected Emergency Care . . . . . 1 cr. hr.
First aid plus emergency care of patient with diabetes, epilepsy, fainting, burns, etc.
15 hrs. theory 15 ct. hrs.

NCE 258 Ethnic Components of Nursing Care . . . . . 2 cr. hrs.
Presentation and discussion of care measures and nursing intervention considerations directly related to ethnic origin. The course will focus on concerns of patients commonly encountered in this region.
30 hrs. theory 30 ct. hrs.

NCE 259 The Aging Process . . . . . 2 cr. hrs.
A lecture-discussion course designed to increase awareness of the normal aging process and the assets and liabilities of the older adult. Social and legislative issues, as well as common illnesses, will be discussed.
30 hrs. theory 30 ct. hrs.

OPERATING ROOM TECHNOLOGY (A)
Certificate Program

Upon completion of this program, the graduate will be eligible to write the Operating Room Technician National Certifying Examination.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	15
HOC 106	Basic Patient Care	2	30
ORT 100	Introduction to Surgical Technology	4	60
ORT 105	Pharmacology for Operating Room Tech.	2	30
ORT 106	Operating Room Skills	6	120
ORT 107	Operating Room Instrumentation	3	60
ORT 108	Operating Room Trends	2	30
ORT 109	Operating Room Laboratory Experience	5	115
ORT 110	Operating Room Technician Practicum	7	325
ORT 115	Surgical Pathology and Intervention	4	60
ORT 119	Program Review	2	30
		38	875

Required Related Courses

SCI 101	Science for Health Occupations I	4	90
SCI 202	Science for Health Occupations IV	3	75
PSY 226	Coping with Crises, Stress and Dying	3	45
COM 100	Communication and Stress Management	3	45
		15	255
	TOTAL REQUIRED HOURS	51	1130

OPERATING ROOM TECHNOLOGY (A)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms, reports and therapy requests to his field.
15 hrs. theory 15 ct. hrs.

HOC 106 Basic Patient Care . . . . . 2 cr. hrs.
Focuses on the basic concepts and technical skills common to all health care deliverers. Ethical and legal responsibilities, basic techniques necessary to meet care needs and emergency measures are included.
30 hrs. theory 30 ct. hrs.

ORT 100 Introduction Surgical Technology . . . . . 4 cr. hrs.
Prerequisite: Admission to Operating Room Technician Program or permission of instructor.
Study of the theoretical application for such areas as asepsis, anesthesia, hemostasis, radiology, sepsis, and surgical patient care to the framework of an Operating Room Department. Course is geared to the introductory aspects of surgical care in health care delivery.
60 hrs. theory 60 ct. hrs.

ORT 105 Pharmacology for Operating Room Tech. . . . . 2 cr. hrs.
Prerequisites: Concurrent with ORT 106 and ORT 107.
Exploration of chemical therapy utilization pre-operatively, operatively and post-operatively of the surgical patient. Emphasis is on drug types, effects/side effects, principles of administration and appropriate personnel actions.
30 hrs. theory 30 ct. hrs.

ORT 106 Operating Room Skills . . . . . 6 cr. hrs.
Prerequisites: Concurrent with ORT 105 and ORT 107.
Student involvement in the assimilation and application evaluation of principles relating to basic Operating Room skills necessary to function as an operating Room Tech. Laboratory experiences are focused on achieving satisfactory performance skill levels with basic to advanced types of mechanized and non-mechanized equipment commonly used in an Operating Room.
30 hrs. theory - 90 hrs. laboratory 120 ct. hrs.

ORT 107 Operating Room Instrumentation . . . . . 3 cr. hrs.
Prerequisites: Concurrent with ORT 105 and ORT 106.
Theory and laboratory experiences with instruments, sutures, needles, sponges and dressings commonly found on a major abdominal surgical procedure. Emphasis is placed upon aseptic technique principles, skills integration, adaptic changes in case sequence and counts.
30 hrs. theory - 30 hrs. laboratory 60 ct. hrs.

ORT 108 Operating Room Trends . . . . . 2 cr. hrs.
Prerequisites: Permission of Instructor.
Theory with discussion periods of professional responsibilities, deaths in Operating Room, surgical emergencies and history of surgical care. Emphasis is placed on individualistic approaches to continuing education, problems within the work setting, emergency responses of personnel and importance of historical aspects of surgical care.
30 hrs. theory 30 ct. hrs.

ORT 109 Operating Room Technician Laboratory Experience . . . . . 5 cr. hrs.
Prerequisites: ORT 100, ORT 105, ORT 106, ORT 107, ORT 108.
Student participation in clinical setting in which correct application of principles, refinement of skills levels and evaluation of performance are stressed. Supervision is provided by a college instructor.
115 hrs. laboratory 115 ct. hrs.

ORT 110 Operating Room Technician Practicum . . . . . 7 cr. hrs.
Prerequisites: Concurrent with ORT 109.
Continuation of skills refinement begun in ORT with emphasis concentrated on good patient care and correct aseptic techniques. Primary supervision of activities is performed by hospital personnel with the instructor being responsible for coordination of experiences.
325 hrs. laboratory 325 ct. hrs.

ORT 115 Surgical Pathology and Intervention . . . . . 4 cr. hrs.
Prerequisites: SCI 101, SCI 202 concurrent with ORT 109, ORT 110.
Theory assimilation and application of principles relating to pre-operative pathology, presented with intra-operative interventional approaches to system problems. Focus is on post-operative progression with attention given to possible problems, appropriate Operating Room Staff actions. Emphasis is placed on surgeries of abdomens, chest, head and extremities, pediatrics, cancer and plastic with the direction of Operating Room Technician functioning in areas of instrumentation and supplies.
60 hrs. theory 60 ct. hrs.

ORT 119 Program Review . . . . . 2 cr. hrs.
Prerequisites: Permission of Instructor.
Total review of program theory/skills content for purposes of concept integration and certification examination preperation. Emphasis is placed upon the job-entry description, skills and functions of an Operating Room Technician in an Operating Room and/or related area.
30 hrs. theory 30 ct. hrs.

OPTOMETRIC ASSISTING (N)
Certificate

This program is designed to provide the job entry skills for employment in Optometric offices or clinics.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	15
OPA 100	Ocular Anatomy, Physiology, Pathology	3	45
OPA 105	Visual Science and Optics	2	30
OPA 106	Preliminary Examination Techniques	4	68
OPA 107	Optometric Office Procedures	2	30
OPA 108	Facial Analysis — Frame Selection and Adjustment	2	30
OPA 109	Contact Lenses	5	90
OPA 110	Pharmacology-Emergency Measures for Optometric Assistants	2	30
OPA 115	Clinical Practicum	8	300
OPA 116	Clinical Seminar	1	15
		30	653

Required Related Courses

ENG106	Communications for Health Occupations	3	45
SEC 101	Typewriting I	4	75
SCI 105	The Metric System	1	15
		8	135
	TOTAL REQUIRED HOURS	38	788

OPTOMETRIC ASSISTING (N)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms, reports and therapy requests to his field.
15 hrs. theory 15 ct. hrs.

OPA 100 Ocular Anatomy, Physiology and Pathology . . . . . 3 cr. hrs.
Prerequisites: Admission to Optometric Assisting Program.
A study of surface and intraocular anatomy, relation to and function of each part to the other, common disorders, diseases and abnormal conditions of the eye. An overview of basic anatomical structures of man and functioning of the various components, particularly the pathological conditions directly affecting the eye will be included.
45 hrs. theory 45 ct. hrs.

OPA 105 Visual Science and Optics . . . . . 2 cr. hrs.
Prerequisite: Concurrent enrollment in OPA 100, SCI 105
Properties of light, glass, plastic, single vision, multifocal, photochromic, tinted, coated, antireflection, and low vision lenses. Use of the lensometer, geneva lens measure, calipers, interpupillary measurements, and review of metric system is included.
30 hrs. theory 30 ct. hrs.

OPA 106 Preliminary Examination Techniques ..... 4 cr. hrs.
Prerequisite: Concurrent enrollment in OPA 105

Lecture and lab in basic terminology, visual acuities, cover test, color vision, keystone skills, depth perception (steropsis), case histories, fields, chairside assisting, and related equipment.
45 hrs. theory — 23 hrs. lab 68 ct. hrs.

OPA 107 Optometric Office Procedures ..... 2 cr. hrs.
Prerequisites: SEC 101, ENG 106
Review of basic math, use of office equipment, record keeping, proper telephone techniques, mail recall system, fees, finance, credit procedures, filing systems, insurance forms, appointment scheduling, and patient control. A brief history of the profession, code of ethics, and legal implications included.
30 hrs. theory 30 ct. hrs.

OPA 108 Facial Analysis-Frame Selection and Adjustment ..... 2 cr. hrs.
Prerequisite: Concurrent enrollment in OPA 109

Study of facial structures with subsequent frame selection and adjustment. Minor frame repair and use of related equipment included.
30 hrs. theory 30 ct. hrs.

OPA 109 Contact Lenses ..... 5 cr. hrs.
Prerequisites: OPA 105 and OPA 106
Continuation of OPA 105 with emphasis on contact lenses. Optics of, inspection, verification, polishing, and modification, care and handling procedures. Auxiliary solutions, insertion, removal, and centering techniques. Use of the related equipment included.
45 hrs. theory — 45 hrs. lab 90 ct. hrs.

OPA 110 Pharmacology-Emergency Measures for Optometric Assistants ..... 2 cr. hrs.
Prerequisites: OPA 100 and OPA 106
Designed to familiarize the student with pharmacologic agents common to the eye care field, and their application and common emergency situations, the planning and immediate responses required.
30 hrs. theory 30 ct. hrs.

OPA 115 Optometric Clinical Practicum ..... 8 cr. hrs.
Prerequisites: ENG 106, SEC 101, OPA 106, OPA 107

Through placement in a professional office or clinic, the student is provided the opportunity to perform the duties of an assistant under the direct supervision of a qualified assistant or optometrist.
60 hrs. skill lab — 240 hrs. clinical experience 300 ct. hrs.

OPA 116 Clinical Seminar ..... 1 cr. hr.
Prerequisite: Concurrent enrollment in OPA 115

Clarification of clinical learning experiences through discussion and lab.
15 hrs. theory and lab 15 ct. hrs.

PSYCHIATRIC TECHNICIAN (A)
Certificate

(Open to LPN only. See Health Occupations Division for more information).

RADIATION THERAPY TECHNOLOGY (A)
Certificate or Associate Degree

Upon completion of this program the graduate will be eligible to write the certification examination of the American Registry of Radiologic Technologists for Radiation Therapy.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	20
HOC 106	Basic Patient Care	2	30
HOC 107	Orientation to Clinical Practicum	1	40
HOC 108	Positioning Techniques	2	30
HOC 109	Radiologic Instrument Maintenance	2	30
RAT 200	Survey of Medical and Surgical Diseases	2	30
RTT 125	Radiation Therapy Practicum I	4	200
RTT 200	Physics of Radiation Therapy I	2	30
RTT 205	Radiation Therapy Methodology	2	30
RTT 206	Radiation Oncology I	3	45
RTT 207	Radiation Therapy Practicum II	11	512
RTT 208	Physics of Radiation Therapy II	2	30
RTT 209	Radiation Dosimetry	2	30
RTT 210	Radiation Oncology II	1	20
RTT 215	Radiation Biology and Pathology	2	30
RTT 216	Radiation Therapy Practicum III	13	576
RTT 217	Selected Topics in Radiation Therapy	3	45
RTT 218	Radiation Therapy Practicum IV	15	688
		70	2416

Required Related Courses

BIO 111	Anatomy and Physiology I	4	90
BIO 112	Anatomy and Physiology II	4	90
	Psychology Elective	2	30
	English Elective	2	30
MAT 121	College Algebra	4	60
PHY 115	Introduction to Medical Physics	4	90
CHE 101	Fundamentals of Chemistry	4	90
		24	480
	TOTAL REQUIRED HOURS	94	2896

RADIATION THERAPY TECHNOLOGY (A)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms, reports and requests to his field.
15 hrs. theory 15 ct. hrs.

HOC 106 Basic Patient Care . . . . . 2 cr. hrs.
Focuses on the basic concepts and technical skills common to all health care deliverers. Ethical and legal responsibilities, basic techniques necessary to meet health care needs, and emergency measure are included.
30 hrs. theory 30 ct. hrs.

HOC 107 Orientation to Clinical Practicum . . . . . 1 cr. hr.
An orientation to a Nuclear Medicine, Radiation Therapy or Ultrasound Technology facility designed to acquaint the student with the selected radiologic technology specialty area.
40 hrs. laboratory 40 ct. hrs.

HOC 108 Positioning Techniques . . . . . 2 cr. hrs.
Prerequisites: Admission to the Nuclear Medicine Technology or Radiation Therapy Technology Programs.
Introduction to terminology and general principles of positioning, routine positioning and anatomy of the chest, abdomen and skull as related to Nuclear Medicine and Radiation Therapy procedures.
30 hrs. theory 30 ct. hrs.

HOC 109 Radiologic Instrument Maintenance . . . . 2 cr. hrs.
Prerequisites: Admission to Nuclear Medicine Technology or Radiation Therapy Program and permission of instructor.
Basic electronics of instruments used in the above fields. Course will cover calibration and minor repairs for the same.
30 hrs. theory 30 ct. hrs.

RTT 125 Radiation Therapy Practicum I . . . . . 4 cr. hrs.
Pre-requisite: Admission to Radiation Therapy Technology Program.
A clinical laboratory course designed to introduce the student to the hospital as a whole with specific objectives to complete rotation to related departments.
200 hrs. laboratory 200 ct. hrs.

RAT 200 Survey of Medical Surgical Diseases . . . . . 2 cr. hrs.
Pre-requisite: HOC 100, Acceptance to Radiation Therapy Technology Program or permission of instructor.
Basic causes of diseases, changes that occur in disease and trauma, and related diagnostic and therapeutic measures. Discussion, case examples will be related in the students particular occupational interest.
30 hrs. theory 30 ct. hrs.

RTT 200 Physics of Radiation Therapy I . . . . . 2 cr. hrs.
Prerequisite: Admission to the Radiation Therapy Technology Program.
Co-requisite: RTT 205, RTT 206, RTT 207.
Deals with the theoretical physics of radiation therapy. Focuses on particulate and electromagnetic radiation and their interactions with matter and examination of the theory and construction of cobalt machines, linear accelerators, betatrons, and other treatment machines.
30 hrs. theory 30 ct. hrs.

RTT 205 Radiation Therapy Methodology . . . . . 2 cr. hrs.
Prerequisite: Admission to Radiation Therapy Technology Program.
An introduction to radiation therapy technology. This course will survey types of treatment machines, principles of patient set-ups, geometrical considerations, patient immobilization devices as well as the calculation of radiation dose to patients. It will also correspond very closely with the Radiation Oncology course, providing for discussion of specific primary cancer sites.
30 hrs. theory 30 ct. hrs.

RTT 206 Radiation Oncology I . . . . . 3 cr. hrs.
Prerequisite: Admission to Radiation Therapy Technology Program.
Includes presenting symptoms, diagnostic workup, staging, histologies, treatment portals, critical organs and their tissue tolerances, and survival statistics.
45 hrs. theory 45 ct. hrs.

RTT 207 Radiation Therapy Practicum I . . . . . 11 cr. hrs.
Pre-requisite: Admission to Radiation Therapy Technology Program.
A clinical laboratory course designed to introduce the student to the clinical therapy setting, basic equipment and therapeutic routines. The student will perform therapeutic treatments under the direct supervision of a physician or registered technologist.
512 hrs. laboratory 512 ct. hrs.

RTT 208 Physics of Radiation Therapy II . . . . . 2 cr. hrs.
Co-requisites: RTT 209, RTT 215, RTT 210, RTT 216.
The physics of radiation therapy deals with radioactive and nuclear physics, medical use of radium and other radioactive isotopes, and radiation protection.
30 hrs. theory 30 ct. hrs.

RTT 209 Radiation Dosimetry . . . . . 2 cr. hrs.
Co-requisites: RTT 200, RTT 206.
This course explores dosimetric consideration of complex radiation treatments, radium implants and interstitial implants. Both manual and computer calculations are stressed.
20 hrs. theory 30 ct. hrs.

RTT 210 Radiation Oncology II . . . . . 1 cr. hrs.
Discussion of biological and pathological effects of radiation at the chemical, cellular, organ and whole body levels. Emphasis is placed on the practical aspects of radiation biology with respect to radiation therapy and nuclear medicine.
20 hrs. theory 20 ct. hrs.

RTT 215 Radiation Biology and Pathology . . . . . 2 cr. hrs.

Prerequisite: Admission to the second year of the Radiation Therapy Technology Program or Nuclear Medicine Technology Program.

Co-requisite: RTT 208.

Discussion of the biological and pathological effects of radiation at the chemical, cellular, organ and whole body levels. Emphasis is placed upon the practical aspects of radiation biology with respect to associated radiation therapy and nuclear medicine procedures.

30 hrs. theory 30 ct. hrs.

RTT 216 Radiation Therapy Practicum III . . . . . 13 cr. hrs.

Prerequisite: RTT 207.

An advanced clinical course with increased responsibility in the overall operation of a radiation therapy department. Includes rotation to other hospitals.

576 hrs. laboratory 576 ct. hrs.

RTT 217 Selected Topics in Radiation Therapy . . . . . 3 cr. hrs.

Prerequisite: Permission of Instructor.

Review of courses and clinical work in preparation for the Certification examination given by the American Registry of Radiologic Technologists.

45 hrs. theory 45 ct. hrs.

RTT 218 Radiation Therapy Practicum IV . . . . . 15 cr. hrs.

Prerequisite: RTT 216.

Co-requisite: RTT 217.

The final semester of clinical experience. Here the student will have the opportunity to perform duties typical of a staff radiation therapy technologist as preparation for employment. (37 hours per week)

688 hrs. laboratory 688 ct. hrs.

Notes

RESPIRATORY THERAPY TECHNOLOGY (N)
Associate Degree

The program in Respiratory Therapy Technology is designed to prepare the student for employment as a registry-eligible Respiratory Therapist under the supervision of a physician. Upon completion of the program the student is eligible to take the Registry Examination offered by the National Board for Respiratory Therapy.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HOC 100	Medical Terminology	1	15
HOC 105	Introduction to Pathology	1	15
HOC 106	Basic Patient Care	2	30
RIT 100	Respiratory Technology	3	45
RIT 205	Cardio-Pulmonary Physiology	3	45
RIT 206	Clinical Practicum I	8	360
RIT 207	Pulmonary Function	2	30
RIT 208	Respiratory Pathophysiology	3	45
RIT 209	Pharmacology for Respiratory Therapy	2	30
RIT 210	Respiratory Critical Care	3	45
RIT 215	Department Management	3	45
RIT 216	Therapy Seminar	3	45
RIT 217	Pediatric Respiratory Therapy	2	30
RIT 218	Clinical Practicum II	7	320
RIT 219	Clinical Practicum III	8	360
		51	1460

Required Related Courses

BIO 111	Anatomy and Physiology I	4	90
CHE 101	Fundamentals of Chemistry I	4	90
CHE 102	Fundamentals of Chemistry II	4	90
ENG 106	Communications for Health Occupations	2	30
PSY 226	Coping with stress, Crisis and dying	3	45
BIO 112	Anatomy and Physiology II	4	90
PHY 101	Fundamental Physics I	3	75
MAT 111	Intro. Algebra	3	45
BIO 115	Microbiology	3	75
		30	630
	TOTAL REQUIRED HOURS	81	2,090

Additional Major Courses

RIT 220	Registration and Certification Review	3	45

RESPIRATORY THERAPY TECHNOLOGY (N)

HOC 100 Medical Terminology . . . . . 1 cr. hr.
A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand medical terms, reports and therapy requests to his field.
15 hrs. theory — 15 ct. hrs.

HOC 105 Introduction to Pathology . . . . . 1 cr. hr.
Prerequisite: HOC 100
An introduction to the primary pathophysiological processes of diseases.
15 hrs. theory — 15 ct. hrs.

HOC 106 Basic Patient Care . . . . . 2 cr. hrs.
Focuses on the basic concepts and technical skills common to all health care deliverers. Ethical and legal responsibilities, basic techniques necessary to meet care needs and emergency measures are included.
30 hrs. theory — 30 ct. hrs.

RIT 100 Respiratory Technology . . . . . 3 cr. hrs.
An introduction to sterilization techniques and basic equipment maintenance, assisted and controlled ventilation, chest physiotherapy, ancillary techniques of bronchial hygiene, humidification and aerosols.
45 hrs. theory — 45 ct. hrs.

RIT 205 Cardio Pulmonary Physiology . . . . . 3 cr. hrs.
Prerequisites: BIO 112, CHE 102
An in-depth study of the structure and function of the cardiac and respiratory systems as this knowledge relates to respiratory technology.
45 hrs. theory — 45 ct. hrs.

RIT 206 Clinical Practicum I . . . . . 8 cr. hrs.
Prerequisite: HOC 106
Clinical application orientation to basic respiratory therapy procedures in the clinical setting. Emphasis placed on familiarization of equipment and technique.
360 hrs. practicum — 360 ct. hrs.

RIT 207 Pulmonary Function. . . . . 2 cr. hrs.
An orientation to the basic and advanced pulmonary function studies utilized in Respiratory Therapy.
30 hrs. theory — 30 ct. hrs.

RIT 208 Respiratory Pathophysiology. . . . . 3 cr. hrs.
Prerequisites: RIT 205, RIT 207
An in-depth study of cardio pulmonary anatomy-physiology and disorders. Etiology and course of the disease are discussed. Treatment by the Respiratory Therapist is emphasized.
45 hrs. theory — 45 ct. hrs.

RIT 209 Pharmacology for Respiratory Therapy . 2 cr. hrs.
Prerequisite: BIO 112
Study of the biochemical and physiologic effects of pharmacologic agents commonly encountered in medical conditions requiring respiratory care or respiratory therapy measures.
30 hrs. theory — 30 ct. hrs.

RIT 210 Respiratory Critical Care. . . . . 3 cr. hrs.
Prerequisite: RIT 205 and RIT 206
An in-depth study of basic and advanced techniques utilized in the management of prolonged artificial ventilation and the patient who is critically ill, and the role of the therapist on the critical care team.
45 hrs. theory — 45 ct. hrs.

RIT 215 Department Management . . . . . 3 cr. hrs.
This course includes an introduction to departmental administration. Attention is directed to the organization and operation of a Respiratory Therapy department. The administrative problems, factors influencing a solution, and methods of solution are emphasized.
45 hrs. theory — 45 ct. hrs.

RIT 216 Therapy Seminar . . . . . 3 cr. hrs.
A review and discussion of current topics in Respiratory Therapy and areas of special interest to the student.
45 hrs. theory — 45 ct. hrs.

RIT 217 Pediatric Respiratory Therapy . . . . . 2 Cr. Hrs.
An in-depth study of the pediatric respiratory system from embryology to the first breath. Also included is the pathological entities most often seen and treated in Pediatric Respiratory Therapy.
30 hrs. theory — 30 ct. hrs.

RIT 218 Clinical Practicum II . . . . . 7 cr. hrs.
A clinical application of pulmonary function techniques and basic techniques of Respiratory Therapy outside the intensive care unit.
320 hrs. practicum 320 ct. hrs.

RIT 219 Clinical Practicum III . . . . . 8 cr. hrs.
This clinical application will provide the student with experience in the intensive care unit with emphasis on the role of the therapist as related to the critical care team.
360 hrs. practicum 360 ct. hrs.

RIT 220 Registration and Certification Review . . . . . 3 cr. hrs.
Prerequisite: Completion of requirements for the ARRT Registry or Certification examinations.
This course is designed to help prepare those people taking the Registry (ARRT) or Certification (CRTT) Examinations in Respiratory Therapy. The basic principles and practices of Respiratory Therapy as well as clinical applications will be reviewed.
45 hrs. theory 45 ct. hrs.

Notes

DIVISION OF INDUSTRIAL OCCUPATIONS

Where a program does not indicate the campus by the key A, N, or R, we would suggest you call the campus of your choice for information.

BUILDING TRADES

BRICKLAYING (R)
Certificate or Associate Degree

The Bricklaying Program provides training for job entry skill during the first year in brick and block laying used primarily in residential construction, and the second year in fireplace design and construction, flagstone, moss rock, and advanced masonry techniques.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
BRI 100	Safety, History, Glossary, Use Of Mason Tools	3	60
BRI 105	Related Equipment Used By Brickmasons	3	60
BRI 106	Spreading Mortar, Laying To Line, Use Of Tools	3	60
BRI 107	Basic Leads, Masonry Walls	3	60
BRI 108	Bonded Brick Leads, Joints, Striking & Brushing	3	60
BRI 109	Masonry Piers & Pilasters, Solid & Hollow Masonry	3	60
BRI 110	Bonds, Floors, Masonry Walls	3	60
BRI 115	Through The Wall Joints, Laying To Line	3	60
BRI 116	Tooling, Rake, Grape Joints, Flush Cut	3	60
BRI 117	Headers, Soldiers, Sailors, Rollock, Miter Corner	3	60
BRI 200	Mortar Types, Masonry Cement	3	60
BRI 205	Fireplace Basics	3	60
BRI 206	Fireplace Construction	3	60
BRI 207	Heatilator Construction	3	60
BRI 208	Chimney Construction, Flashing, Cooping	3	60
BRI 209	Fireplace Codes	3	60
BRI 210	Flagstone, Moss Rock	3	60
BRI 215	Reinforced Masonry	3	60
BRI 216	Over the Wall Construction	3	60
BRI 217	Mason Tender	3	60
		60	1200

Required Related Courses

	Math Elective	3	45
	English Elective	3	45
	Social Science Elective	3	45
	Electives	6	90
		15	225
	TOTAL REQUIRED HOURS	75	1425

Additional Major Courses

BRI 118	Masonry Code and Inspection	1	20
BRI 120	Bricklaying For Construction Trades	3	60
BRI 297	Cooperative Work Experience	2-9	60-375
BRI 299	Independent Study	3	90
BTR 125	Blueprint Reading For Construction Trades	4	68
BTR 126	Blueprint Reading For Mechanical Trades	4	68
BTR 127	Building Inspection For Construction Trades	4	68
BTR 128	Estimating Residential Construction Costs	4	68
BTR 129	Construction Materials I	4	68
BTR 130	Construction Materials II	4	68
BTR 140	Overview Of Bricklaying, Carpentry, Electrical & Plumbing Fields	4	68

BRICKLAYING (R)

BRI 100 Safety, History, Glossary, Use Of Mason Tools . . . . . 3 Cr. Hrs.
Safety practices, history of masonry in Colorado, terms used by the brickmason, proper use and care of bricklaying tools.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 105 Related Equipment Used By Brickmasons. . . . . 3 Cr. Hrs.
Operation of the masonry saw, mortar mixer, and scaffolds.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 106 Spreading Mortar, Laying To Line, Use Of Tools . . . . . 3 Cr. Hrs.
Using the trowel to spread mortar, laying brick and block to line, and use of brickmason tools.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 107 Basic Leads, Masonry Walls . . . . . 3 Cr. Hrs.
Layout and construction of basic brick and block leads.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 108 Bonded Brick Leads, Joints, Striking & Brushing . . . . . 3 Cr. Hrs.
Layout and construction of bonded brickheads, different mortar joints, and methods used in tooling masonry walls.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 109 Masonry Piers & Pilasters, Solid & Hollow Masonry . . . . . 3 Cr. Hrs.
Layout, squaring and plumbing masonry piers and pilasters, and solid and hollow masonry walls.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 110 Bonds Floors, Masonry Walls . . . . . 3 Cr. Hrs.
Identification of masonry bonds, laying out of masonry walls, and laying brick floors.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 115 Through the Wall Joints, Laying To Line. . . . . 3 Cr. Hrs.
Construction of leads using through the wall units. Laying through the wall units to a line, and identifying types of through the wall bonding.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 116 Tool, Rake, Grape Joints, Flush Out . . . . . 3 Cr. Hrs.
Identifying and skill development of the different types of tools.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 117 Headers, Soldiers, Sailors, Rollock, Miter Corner . . . . . 3 Cr. Hrs.
Characteristics and skill development in laying brick in the various positions of the soldiers, sailors, rollock, and the miter corner.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 118 Masonry Codes and Inspection . . . . . 1 Cr. Hr.
Codes will cover brick veneer, solid masonry, fireplaces, and block laying with inspections on job sites.
5 Hrs. Theory—15 Hrs. Lab 20 Ct. Hrs.

BRI 120 Bricklaying For Construction Trades. . . . . 3 Cr. Hrs.
Orientation to the field of bricklaying. General principles, initial techniques and skill development, and how bricklaying relates to the various trades.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 200 Mortar Types, Masonry Cement . . . . . 3 Cr. Hrs.
Types, specifications, and properties of mortar, and skill development in mixing.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 205 Fireplace Basics . . . . . 3 Cr. Hrs.
Types, parts, and terms associated with chimneys and fireplaces, factors to consider in constructing fireplaces.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 206 Fireplace Construction. . . . . 3 Cr. Hrs.
Characteristics of firebrick, procedures for buttering firebrick, and construction of a firebox and fireplace.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 207 Heatilator Construction . . . . . 3 Cr. Hrs.
Installing a heatilator fireplace, and using precast fireboxes.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 208 Chimney Construction, Flashing, Cooping. . . . . 3 Cr. Hrs.
Layout and construction of masonry stack, and the installation of flashing.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 209 Fireplace Codes . . . . . 3 Cr. Hrs.
Fireplace codes, types of mortar used in fireplaces, and further skill development.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 210 Flagstone, Moss Rock. . . . . 3 Cr. Hrs.
Identifying types of rock, laying of flagstone in walls and walks, and laying moss rock.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 215 Reinforced Masonry . . . . . 3 Cr. Hrs.
Orientation to the necessary materials used in reinforced brick masonry, importance of using different materials and skill development in constructing reinforced masonry walls.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 216 Over the Wall Construction. . . . . 3 Cr. Hrs.
Laying brick in the "over the wall" construction method.
15 Hrs. Theory—45 Hrs. Lab. 60 Ct. Hrs.

BRI 217 Mason Tender. . . . . 3 Cr. Hrs.
Scoffoling construction, stocking scoffaling and types of masonry units.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

BRI 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program study developed with coordinated college course work and industry work experience.
15 Hrs. Theory — 45-360 Hrs. Lab. 60-375 Ct. Hrs.

BRI 299 Independent Study. . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the bricklaying program, and outside the program offerings.
90 Hrs. Lab 90 Ct. Hrs.

BTR 125 Blueprint Reading For Construction Trades. . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the mechanical trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 126 Blueprint Reading For Mechanical Trades . . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 127 Building Inspection For Construction Trades. . . . . 4 Cr. Hrs.
Examination and evaluation of construction work in progress. Comparing and contrasting with recognized norms or standards to meet state and local building requirements.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 128 Estimating Residential Construction Costs. . . . . 4 Cr. Hrs.
Construction mathematical review, plan reading, specifications, excavation, take off estimates, concrete foundations, footings, caissons, and slabs. Rough structure, and full enclosure.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 129 Construction Materials I. . . . . 4 Cr. Hrs.
Terminology, nomenclature, board footage, lumber, plywood, millwork, brick and cement will be covered by lecture and field trips.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 130 Construction Materials II . . . . . 4 Cr. Hrs.
Roofing, drywall, steel products, beams, stress graded lumber, and building codes will be covered by lecture and field trips.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 140 Overview Of Bricklaying, Carpentry, Electrical, & Plumbing Fields. . . . . 4 Cr. Hrs.
Relationship of each trade to the total construction project, and how coordinated efforts are regulated from beginning to completion.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

CARPENTRY (R)
Certificate or Associate Degree

The Carpentry Program provides theory, techniques, and laboratory training for job entry skills to enter the residential carpentry field and job upgrading and refresher courses for people already employed in the industry.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
CAR 100	Orientation, Satety & Construction Materials	3	60
CAR 105	Hand & Power Tools	3	60
CAR 106	Plans, Specifications & Uniform Building Code	3	60
CAR 107	Site Layout & Concrete Forms For Footings	3	60
CAR 108	Concrete Forms For Foundation Walls	3	60
CAR 109	Sill & Floor Framing	4	80
CAR 110	Wall & Partition Framing	5	100
CAR 115	Stair & Roof Framing	6	120
CAR 200	Exterior Trim	3	60
CAR 205	Exterior Doors & Windows	4	80
CAR 206	Exterior Wall Coverings	4	80
CAR 207	Roof Coverings	4	80
CAR 208	Interior Trim Work	4	80
CAR 209	Cabinet Making	4	80
CAR 210	Plastic Laminates	3	60
CAR 215	Cabinet Installation	4	80
		60	1200

Required Related Courses

	Math Elective	3	45
	English Elective	3	45
	Social Science Elective	3	45
	Electives	6	120
		15	255
	TOTAL REQUIRED HOURS	75	1455

Additional Major Courses

CAR 120	Carpentry For Construction Trades	3	60
CAR 216	Drywall Construction	4	80
CAR 217	Advanced Cabinet Making	4	80
CAR 218	Bidding and Buying	2	40
CAR 297	Cooperative Work Experience	2-9	60-375
CAR 299	Independent Study	3	90
BTR 125	Blueprint Reading for Construction Trades	4	68
BTR 126	Blueprint Reading for Mechanical Trades	4	68
BTR 127	Building Inspection for Construction Trades	4	68
BTR 128	Estimating Residential Construction Costs	4	68
BTR 129	Construction Materials 1	4	68
BTR 130	Construction Materials II	4	68

CARPENTRY (R)

CAR 100 Orientation, Safety & Construction Materials . . . . . 3 Cr. Hrs.
Orientation, field trips, occupational outlook in the carpentry trade, and securing of employment. Orientation to safety rules and practices required in the trade. Identification of the grades of lumber and common defects, writing a bill of materials for ordering lumber, different fasteners and their uses, and Guard Foot Board calculations.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 105 Hand & Power Tools . . . . . 3 Cr. Hrs.
Basic rules for the care, safe and correct use of hand tools, and skill development. Identification and use of the power woodworking machines and tools, safety rules for each, and skill development.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 106 Plans, Specifications & Uniform Building Code . . . . . 3 Cr. Hrs.
The terminology associated with blueprint reading, alphabet of lines, drawing symbols, measure scaled drawings, and the Uniform Building Code.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 107 Site Layout & Concrete Forms for Footing . . . . . 3 Cr. Hrs.
Surface aspects, services and zoning restrictions that influence the selection of a building site; locate the buildings using the plot plans, layout and squaring the building with the use of batter boards. Footing form terminology, styles of footings, construct types of footing forms, and strip a pier footing form.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 108 Concrete Forms For Foundation Walls . . . . . 3 Cr. Hrs.
Steel reinforcements and installation along with identification and application of all foundation wall forms; built in place, bulkheads, blockouts, architectural effects, and other special modifications.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 109 Sill & Floor Framing . . . . . 4 Cr. Hrs.
Floor and sill framing terminology, framing members, styles of framing, and installation of floor joist and subflooring.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

CAR 110 Wall & Partition Framing . . . . . 5 Cr. Hrs.
PREREQUISITE: CAR 100 thru 108
Wall and partition members, framing terminology, layout cutting, and assembly.
25 Hrs. Theory — 75 Hrs. Lab 100 Ct. Hrs.

CAR 115 Stair & Roofing Framing . . . . . 6 Cr. Hrs.
PREREQUISITE: CAR 100 thru 108
Terminology and components of stairs, layout and construction of common types. Roofing members and styles, determining rafter length, cutting, and assembling various roof structures. Estimating cost of material for each type of roof identifying components of a roof from a drawing, and the grades and types of shingles.
30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

CAR 120 Carpentry For Construction Trades . . . . . 3 Cr. Hrs.
Orientation to the field of carpentry, general principles, initial techniques and skill development, and how carpentry relates to the various construction trades.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 200 Exterior Trim . . . . . 3 Cr. Hrs.
PREREQUISITE: CAR 100 thru 108 or equivalent
Study materials used in exterior trim, and proper installation of soffet, facia, freeze, brick mold, and other exterior trim items.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 205 Exterior Doors & Windows . . . . . 4 Cr. Hrs.
PREREQUISITE: CAR 100 thru 108 or equivalent
Study existing and new exterior doors and windows on the market, and proper installation.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

CAR 206 Exterior Wall Coverings . . . . . 4 Cr. Hrs.
PREREQUISITES: CAR 100 thru 108
Terminology associated with exterior wall coverings. Common and new materials used and proper installation.

CAR 207 Roof Covering . . . . . 4 Cr. Hrs.
PREREQUISTE: CAR 100 thru 108 or equivalent
The study of roofing materials, estimating of materials and proper application of various roofing systems.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

CAR 208 Interior Trim Work . . . . . 4 Cr. Hrs.
PREREQUISITE: CAR 100 thru 108 or equivalent
Study of interior trim materials; paneling, base, moldings, casings, doors, shelves, and proper installation of doors and all trim items.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

CAR 209 Cabinet Making. . . . . 4 Cr. Hrs.
Components of a cabinet, types of materials used, construction, installation of hardware, and proper use of power tools.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

CAR 210 Plastic Laminates . . . . . 3 Cr. Hrs.
Terminology and study of kinds of plastic laminates available. Proper handling, installation and repair of laminate materials, and installation of prefabricated counter tops.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

CAR 215 Cabinet Installation . . . . . 4 Cr. Hrs.
PREREQUISITE: CAR 100 thru 108 or equivalent
Proper installation of factory built cabinets, and a study of various cabinets on the market.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

CAR 216 Drywall Construction . . . . . 4 Cr. Hrs.
Terminology associated with drywall construction, estimating the material needed, concealing joints and fastners.
20 Theory Hrs. — 60 Hrs. Lab 80 Ct. Hrs.

CAR 217 Advanced Cabinet Making . . . . . 4 Cr. Hrs.
Styles and types of cabinets. Components of cabinets drawers, rails, shelvings, and depths. Bathroom Vanities, Plastic laminates, and installation, including installation hardware.

CAR 218 Bidding and Buying. . . . . 2 Cr. Hrs.
Selecting, determining, ordering, locating outlets for purchasing materials and studying the process of working through sub-contractors for estimating, Electrical, Plumbing, Heating, Kitchen and Bath Cabinets, tile and carpet and other types of material relating to construction. Methods for procedures for securing bids from sub-contracts and material supplies for residential construction.
20 Theory Hrs. — 20 Hrs. Lab 40 Ct. Hrs.

CAR 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory — 45-360 Hrs. Lab 60-375 Ct. Hrs.

CAR 299 Independent Study. . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Carpentry Program, and outside the program offerings.
90 Hrs. Lab. 90 Ct. Hrs.

BTR 125 Blueprint Reading For Construction Trades. . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

BTR 126 Blueprint Reading For Mechanical Trades . . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the mechanical trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

BTR 127 Building Inspection For Construction Trades. . . . . 4 Cr. Hrs.
Examination and evaluation of construction work in progress. Comparing and contrasting with recognized norms or standards to meet state and local building requirements.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

BTR 128 Estimating Residential Construction Costs. . . . . 4 Cr. Hrs.
Construction mathematical review, plan reading, specifications excavation, take off estimates, concrete foundations, footings, caissons, and slabs. Rough structure, and full enclosure.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

BTR 129 Construction Materials I. . . . . 4 Cr. Hrs.
Terminology, nomenclature, board footage, lumber, plywood millwork, brick and cement will be covered by lecture and field trips.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

BTR 130 Construction Materials II . . . . . 4 Cr. Hrs.
Roofing, drywall, steel products, beams, stress graded lumber, and building codes will be covered by lecture and field trips.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

BTR 140 Overview of Bricklaying, Carpentry, Electrical & Plumbing Fields. . . . . 4 Cr. Hrs.
Relationship of each trade to the total construction project, and how coordinated efforts are regulated from beginning to completion.
45 Hrs. Theory — 23 Hrs. Lab 68 Ct. Hrs.

PLUMBING (R)
Certificate or Associate Degree

This program is designed to prepare individuals with basic knowledge of job entry skills for plumbing. It is also intended for job upgrading in special areas and preparation of plumbers for city or state journeyman tests.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
PLU 100	Orientation Of Tools, Basic Plumbing, & Drawings	3	60
PLU 105	Basic Waste Layout & Code Regulations	3	60
PLU 106	Basic Venting & Code Regulations	3	60
PLU 107	Water Piping Methods	3	60
PLU 108	Gas Pipe, Code, & Sizing	3	60
PLU 109	Residential Plumbing	3	60
PLU 110	Finish & Installation Of Plumbing Fixtures	3	60
PLU 115	Rough-In & Setting Of Special Fixtures	3	60
PLU 116	Plumbing Repair	3	60
PLU 200	Plumbing Business Requirements & Cost Estimating	3	60
PLU 206	Hot Water Heating — Installation & Maintenance	3	60
PLU 207	Basic Solar Energy	3	60
PLU 208	Advanced Solar Energy	3	60
PLU 210	Commercial Layout & Code, Multi-Story Projects	3	60
PLU 215	Colorado State Code Requirements	3	60
PLU 216	Uniform Plumbing Code	3	60
PLU 219	Denver City Code	3	60
PLU 217	Foreman & Superintendent Training	3	60
		54	1080

Required Related Courses

	Math Elective	3	45
	English Elective	3	45
	Social Science Elective	3	45
	Electives	6	90
		15	225
	TOTAL REQUIRED HOURS	75	1425
		69	1305

Additional Major Courses

PLU 120	Plumbing For Construction Trades	3	60
PLU 218	Control For Heating, Air Conditioning, & Plumbing	3	60
PLU 297	Cooperative Work Experience	2-9	60-375
PLU 299	Independent Study	3	90
BTR 125	Blueprint Reading For Construction Trades	4	68
BTR 126	Blueprint Reading For Mechanical Trades	4	68
BTR 127	Building Inspection For Construction Trades	4	68
BTR 128	Estimating Residential Construction Costs	4	68
BTR 129	Construction Materials I	4	68
BTR 130	Construction Materials II	4	68
BTR 140	Overview Of Bricklaying, Carpentry, Electrical, & Plumbing Fields	4	68

PLUMBING (R)

PLU 100 Orientation Of Tools, Basic Plumbing & Drawings ..... 3 Cr. Hrs.
Soldering techniques and skill development, bathroom drawings using 30/60 isometric three dimensional system, and material list from drawings.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 105 Basic Waste Layout & Code Regulations ..... 3 Cr. Hrs.
Installation of small plumbing jobs using soil pipe, plastic or copper tubing to meet code requirements.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 106 Basic Venting & Code Requirements ..... 3 Cr. Hrs.
Venting systems, making material lists, and installation.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 107 Water Piping Methods ..... 3 Cr. Hrs.
Drawing water plans, sizing, and installation.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 108 Gas Pipe, Code, & Sizing ..... 3 Cr. Hrs.
Cutting and installing gas pipe from a drawing to meet required code and safety regulations.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 109 Residential Plumbing ..... 3 Cr. Hrs.
Drawing complete soil waste, vent, water, and gas systems, which will meet all local codes and safety procedures; and skill development in installation.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 110 Finish & Installation Of Plumbing Fixtures ..... 3 Cr. Hrs.
Installing plumbing fixtures on existing rough-ins to meet all code and safety requirements.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 115 Rough-In & Setting Of Special Fixtures ..... 3 Cr. Hrs.
Installing special fixtures under special circumstances such as: dishwasher disposals, dishwasher service, sinks, urinals, wall hung water closets, and mounting fixtures on concrete.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 116 Plumbing Repair ..... 3 Cr. Hrs.

Repairing, servicing, or replacing plumbing equipment.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 120 Plumbing For Construction Trades .... 3 Cr. Hrs.
Orientation to the field of Plumbing, general principles, initial techniques and skill development, and how Plumbing relates to the various construction trades.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

PLU 200 Plumbing Business Requirements & Cost Estimating ..... 3 Cr. Hrs.
Setting up plumbing business, estimating, need for licenses, and Federal and State tax procedures.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 205 Advanced Isometric Blueprint Reading & Layout ..... 3 Cr. Hrs.
Reading and interpreting blueprints, drawing isometrics, and orthographic projections.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 206 Hot Water Heating — Installation & Maintenance..... 3 Cr. Hrs.
Installation of hot water heating systems, service, and maintenance.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

PLU 207 Basic Solar Energy ..... 3 Cr. Hrs.
Drawing and installing solar systems, including panels for collection, storage and distribution.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 208 Advanced Solar Energy ..... 3 Cr. Hrs.
Solar panel construction, installing complete solar heating or domestic hot water systems, with a study of the variables and flexibility of the system.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 219 City of Denver Code, its use and enforcement..... 3 Cr. Hrs.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

PLU 210 Commercial Layout & Code, Multi-Story Projects ..... 3 Cr. Hrs.
Laying commercial and multi-story projects. Different types of plumbing installations in commercial work, and code applications to layout.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 215 Colorado State Code Requirements ..... 3 Cr. Hrs.
Plumbing code, violations of state code, endangerments to health and safety, and the state plumbing code test.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 216 Uniform Plumbing Code & Denver City Code ..... 3 Cr. Hrs.
Uniform Plumbing Code, proper installation of the code and the need to enforce.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 217 Foreman & Superintendent Training ... 3 Cr. Hrs.
Communications between management and labor, with responsibilities to management and the men you supervise.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 218 Control For Heating, Air Conditioning, & Plumbing..... 3 Cr. Hrs.
Wiring sequence and how to read basic wiring diagrams for low voltage (24 volts) systems. Hook up pumps, zone valves, thermostat, etc. on air conditioning, plumbing, and heating systems.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

PLU 297 Cooperative Work Experience ..... 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 45-360 Hrs. Lab. 60-375 Ct. Hrs.

PLU 299 Independent Study..... 3 Cr. Hrs.
Individual study on a special project which is related to the Plumbing Program, and is outside the program offerings.
90 Hrs. Lab 90 Ct. Hrs.

BTR 125 Blueprint Reading For Construction Trades ..... 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 126 Blueprint Reading For Mechanical Trades..... 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the mechanical trades. Development of proficiency in making three-view pictorial sketches.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 127 Building Inspection For Construction Trades ..... 4 Cr. Hrs.
Examination and evaluation of construction work in progress. Comparing and contrasting with recognized norms or standards to meet state and local building requirements.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 128 Estimating Residential Construction Costs..... 4 Cr. Hrs.
Construction mathematical review, plan reading, specifications, excavation, take off estimates, concrete foundations, footings, caissons, and slabs. Rough structure, and full enclosure.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 129 Construction Materials I..... 4 Cr. Hrs.
Terminology, nomenclature, board footage, lumber, plywood, millwork, brick and cement will be covered by lecture and field trips.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 130 Construction Materials II ..... 4 Cr. Hrs.
Roofing, drywall, steel products, beams, stress graded lumber, and building codes will be covered by lecture and field trips.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 140 Overview Of Bricklaying, Carpentry, Electrical, & Plumbing Fields ..... 4 Cr. Hrs.
Relationship of each trade to the total construction project, and how coordinated efforts are regulated from beginning to completion.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

SOLAR ENERGY-INSTALLATION & MAINTENANCE (R)

(Certificate or Associate Degree)

The program is designed to provide the student with the knowledge and skills for job entry into the solar energy field, in the area of installation and maintenance, and to provide upgrading and refresher courses for people already employed in the field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
SOM 220	Basic Solar Systems	3	60
SOM 221	Solar Engineering Technology I	4	68
SOM 222	Solar Engineering Technology II	4	68
SOM 225	Solar System Design & Layout	3	60
SOM 226	Solar Panel Arrays	3	60
SOM 227	Testing & Evaluation Of Solar Systems	3	60
SOM 228	Solar System Maintenance	3	60
SOM 229	Solar Panel Installations	3	60
SOM 235	Basic Solar Controls	3	60
SOM 236	Advanced Solar Systems & Controls	3	60
SOM 237	Passive Solar Systems	3	60
SOM 238	Alternative Backup Systems for Solar Energy	3	60
SOM 239	Introduction to Photovoltac & Wind Energy	3	60
PLU 100	Orientation of Tools, Basic Plumging, & Drawings	3	60
PLU 107	Water Piping Methods	3	60
PLU 206	Hot Water Heating - Installation & Maintenance	3	60
BRI 120	Bricklaying For Construction Trades	3	60
BTR 125	Blueprint Reading For Construction Trades	4	68
CAR 120	Carpentry For Construction Trades	3	60
SHM 100	Basic Sheet Metal For Solar Energy	3	60
		63	1224

Required Related Courses

Math Elective	3	45
English Elective	3	45
Social Science Elective	3	45
Electives	6	90
	15	225
TOTAL REQUIRED HOURS	78	1449

Additional Major Courses

SOM 297	Cooperative Work Experience	2-9	60-375
SOM 299	Independent Study	3	90

Solar Energy
Installation & Maintenance

SOM 220 Basic Solar Systems . . . . . 3 Cr. Hrs.
Different types of solar systems, collectors storage, and distribution. Solar heating, solar domestic hot water and solar air conditioning. Difference between air and liquid systems.
15 Hrs. Theory-45 Hrs. Lab 60 Ct. Hrs.

SOM 221 Solar Engineering Technology I . . . . . 4 Cr. Hrs.
The purpose of this course is to develop the capability of practitioners in the home building industry to size, install and operate solar heating and cooling systems for residential buildings. Also included is an overview of our energy problems today, a review of engineering math pertaining directly to this course, and basic physics.
45 Hrs. Theory/Lecture-23 Hrs. Lab. 68 Ct. Hrs.

SOM 222 Solar Engineering Technology II. . . . . 4 Cr. Hrs.
This course is limited in scope to the design of solar heating and cooling systems for residential buildings, with primary emphasis on heating systems, although solar cooling systems are discussed, design and economic analysis of systems are the topics, and a review of engineering math related to this class.
45 Hrs. Theory/Lecture-23 Hrs. Lab. 68 Ct. Hrs.

SOM 225 Solar System Design & Layout. . . . . 3 Cr. Hrs.
Keeping architectural and solar systems in harmony; adapting to existing structures, and when it is practical; types of collectors, flat plate air, or liquid; omni directional tracting and tower reflection used in high temperature concentrating collectors.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 226 Solar Panel Arrays . . . . . 3 Cr. Hrs.
Principles of operation and functional components, as in lumber and type required. Construction features of most air or liquid panels, and construction of a basic panel.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 227 Testing & Evaluation Of Solar Systems. . . . . 3 Cr. Hrs.
Cost, efficiency, and durability of panels, cost of backup systems, and types of control and sensors used.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 228 Solar System Maintenance. . . . . 3 Cr. Hrs.
Repair of panels; checking for heat loss; where and how to correct condition of liquid evaluation equipment; maintenance of pumps, blowers, coils, and controls.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 229 Solar Panel Installations . . . . . 3 Cr. Hrs.
Installing all types of panel on all types of roofs.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 235 Basic Solar Controls. . . . . 3 Cr. Hrs.
Theory of low and line voltage controls. Emphasis on schematic and layout techniques. Safety and basic electric components discussed. Trouble shooting solar control system and operational problem solving.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 236 Advanced Solar Systems & Controls . . . . . 3 Cr. Hrs.
This course will cover solar systems and controls of flat plate and concentrating collectors and solar systems, heat pumps, solar cooling and dehumidifying with emphasis on trouble shooting, and problems resolution using lab systems and simulators.
30 Hrs. Theory/Lecture-30 Hrs. Lab. 60 Ct. Hrs.

SOM 237 Passive Solar Systems . . . . . 3 Cr. Hrs.
A study of the theory and use of passive solar energy. The design of the structure in harmony with passive systems experiment different storage methods, and cost analysis of passive systems versus other heating methods.
30 Hrs. Theory-30 Hrs. Lab. 60 Ct. Hrs.

SOM 238 Alternative Backup Systems for Solar Systems . . . . . 3 Cr. Hrs.
Review of conventional and nonconventional sources of energy with applications.
30 Hrs. Theory-30 Hrs. Lab. 60 Ct. Hrs.

SOM 239 Introduction to Photovoltac & Wind Energy . . . . . 3 Cr. Hrs.
This course will explore the state-of-the-art hardware and its application for residential use. It will include discussion of the electrical circuits and components, power regulation and storage of electrical energy.
30 Hrs. Theory-30 Hrs. Lab. 60 Ct. Hrs.

PLU 100 Orientation of Tools, Basic Plumbing & Drawings . . . . . 3 Cr. Hrs.
Soldering techniques and skill development, bathroom drawings using 30/60 isometric three dimensional system, and material list from drawings.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

PLU 107 Water Piping Methods . . . . . 3 Cr. Hrs.
Drawing water plans, sizing and installation.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

PLU 206 Hot Water Heating — Installation & Maintenance . . . . . 3 Cr. Hrs.
Installation of hot water heating systems, service, and maintenance.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

BTR 125 Blueprint Reading For Construction Trades . . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs, Lab. 68 Ct. Hrs.

BRI 120 Bricklaying For Construction Tades . . . . . 3 Cr. Hrs.
Orientation to the field of bricklaying. General principles, initial techniques and skill development, and how bricklaying relates to the various trades.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

CAR 120 Carpentry For Construction Trades . . . . . 3 Cr. Hrs.
Orientation to the field of carpentry, general principles, initial techniques and skill development, and how carpentry relates to the various construction trades.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

SOM 100 Sheet Metal for Solar Energy . . . . . 3 Cr. Hrs.
Introduction to the Sheet Metal field, safety, basic equipment, and tools. Fabrication, techniques, and blueprint interpretation.
15 Hrs. Theory-45 Hrs. Lab. 60 Ct. Hrs.

SOM 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory-45-360 Hrs. Lab. 60-376 Ct. Hrs.

SOM 299 Independent Study . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Diesel Program and outside the program offering.
90 Hrs. Lab. 90 Ct. Hrs.

SURVEYING (R)

The Surveying Program provides theoretical training and field practice for a surveyor to enter and succeed in employment in the surveying profession. Parts of this program can be taken for upgrading within the profession.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
SUR 100	Surveying — Field Work, Elementary	11	218
SUR 101	Surveying Calculations I	4	64
SUR 105	Surveying Drafting	9	188
SUR 106	Surveying Computer Applications	3	53
SUR 200	Surveying — Field Work, Advanced	11	218
SUR 201	Surveying Calculations II	3	49
SUR 202	Surveying Calculations III	3	49
SUR 205	Photogrammetry For Surveyors	6	109
SUR 206	Legal Aspects Of Surveying	3	45
CET 105	Contracts & Specifications	3	45
		56	1038

Required Related Courses

MAT 121	College Algebra	4	60
MAT 122	Trigonometry & Functions	3	45
MAN 116	Principles Of Supervision	3	45
ENG 231	Technical Writing	3	45
	Math, Science, or Social Science Elective	6	90
		19	285
		75	1323

Additional Major Courses

SUR 120	Surveying For Construction & Technical Trades	3	60
SUR 216	Surveying Calculation Refresher	4	60

SURVEYING (R)

SUR 100 Surveying — Field Work, Elementary . . . . . 11 Cr. Hrs.
Prerequisite: Consent of instructor.
Use, care and theory of the chain and level, introduction to transit, field practice in chaining, elevations with hand and engineer level, and introductory transit work. Office practice stresses theory and importance of field notes.
60 Hrs. Theory - 158 Hrs. Lab. 218 Ct. Hrs.

SUR 101 Surveying Calculations I . . . . . 4 Cr. Hrs.
Prerequisite: Consent of instructor
Hand solutions with and without calculators of applied mathematical surveying relationships. Student should spend a minimum of 3 hours per week outside the classroom on homework.
53 Hrs. Theory - 11 Hrs. Lab 64 Ct. Hrs.

SUR 105 Surveying Drafting . . . . . 9 Cr. Hrs.
Prerequisite: SUR 100
Basic drafting techniques and principles of three dimensional projection applied to surveying problems. Surveying drafting of traverses, plats, route survey drawings and maps.
30 Hrs. Theory - 158 Hrs. Lab. 188 Ct. Hrs.

SUR 106 Surveying Computer Applications . . . . . 3 Cr. Hrs.
Prerequisite: SUR 100 & SUR 101
Student is required to program repetitious surveying problems on a small office computer. Programming may be in BASIC, FOCAL, FORTRAN, or COGO.
30 Hrs. Theory - 23 Hrs. Lab. 53 Ct. Hrs.

SUR 120 Surveying For Construction & Technical Trades . . . . . 3 Cr. Hrs.
General surveying concepts of distance, elevation and angles. Emphasis on field work, enough theory to understand basic principles. This course can be substituted for any surveying major course.
15 Hrs. Theory - 45 Hrs. Lab. 68 Ct. Hrs.

SUR 200 Surveying — Field Work, Advanced . . . . . 11 Cr. Hrs.
Prerequisite: SUR 100, SUR 101, SUR 105
Use, care and theory of transit, modern levels, theodolites, EDM and plane table, Field and office practice with horizontal and vertical angles applied to line, curve area problems, and astronomical observations. Field problems stress application, accuracy and evaluation of the field data.
60 Hrs. Theory - 158 Hrs. Lab. 218 Ct. Hrs.

SUR 201 Surveying Calculations II . . . . . 3 Cr. Hrs.
Prerequisite: SUR 100, and SUR 101
Understanding of application and theory of: traverse calculations; areas of straight and curved boundaries; horizontal curves; vertical curves; route surveys; earth work. The student should have his own calculator and spend a minimum of 3 hours per week outside the classroom on homework.
38 Hrs. Theory - 11 Hrs. Lab. 49 Ct. Hrs.

SUR 202 Surveying Calculations III . . . . . 3 Cr. Hrs.
Prerequisite: SUR 201
Continuation of SUR 201, Surveying Calculations II. Subjects: rectangular coordinates; State plane coordinate systems; United States public land surveys; calculations for astronomical observations; error analysis; least square adjustments. Student should spend at least 3 hours per week outside the classroom on homework.
38 Hrs. Theory - 11 Hrs. Lab. 49 Ct. Hrs.

SUR 205 Photogrammetry For Surveyors . . . . . 6 Cr. Hrs.
Prerequisite: SUR 201
The interpretation and evaluation of aerial photographs with photogrammetric instruments from pocket stereoscope to projection plotters.
53 Hrs. Theory - 56 Hrs. Lab. 109 Ct. Hrs.

SUR 206 Legal Aspects Of Surveying . . . . . 3 Cr. Hrs.
Prerequisite: SUR 200
Problems encountered by the surveyor dealing with boundary control, property disputes and legal cases.
45 Hrs. Theory 45 Ct. Hrs.

SUR 216 Surveying Calculation Refresher . . . . . 4 Cr. Hrs.
REFRESHER course for practicing surveyors who need a review in surveying calculations and theory. Course not suitable for first-time student. H & V curves, earth work, coordinates, astronomical observations and topics selected by the class.
60 Hrs. Theory 60 Ct. Hrs.

CET 105 Contracts & Specifications . . . . . 3 Cr. Hrs.
The Law of Contracts and its application to construction and engineering activities. The drafting of specifications for labor, material, processes, and construction performance.
45 Hrs. Theory 45 Ct. Hrs.

DRAFTING AND DESIGN

ARCHITECTURAL TECHNOLOGY (N)
2-Yr. Certificate and/or Associate Degree

This program equips individuals with appropriate attitudes, skills, and knowledge as entry level drafting technicians in Architectural offices and related building construction industries.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ATE 100	Basic Architectural Techniques	3	60
ATE 105	Three Dimensional Drawing Methods	3	60
ATE 106	Construction Drawing Fundamentals	3	60
ATE 107	Residential Construction Drawings	6	120
ATE 108	Residential Construction Details	3	60
ATE 109	Light Commercial Construction Drawings	6	120
ATE 110	Light Commercial Construction Details	6	120
ATE 200	Light Commercial Design	6	120
ATE 205	Structural Design	3	60
ATE 206	Structural Framing Plans	3	60
ATE 207	Air Conditioning Design	3	60
ATE 208	Electrical Design	3	60
ATE 209	Plumbing Design	3	60
ATE 210	Public Building Design	6	120
ATE 215	Mechanical Equipment of buildings or one of the following: Elective, Cooperative Work Experience, or Independent Study	3	60
		60	1200

Required Related Courses

Occupational Communications		
Elective	3	45
Math Electives	5	80
Social Science Elective	3	45
	11	170
	71	1370

Additional Major Courses

ATE 216	Site Planning	6	120
ATE 217	Architectural Surveys	3	60
ATE 297	Cooperative Work Experience	3	
ATE 299	Independent Study	3	90

ARCHITECTURAL TECHNOLOGY (N)

ATE 100 Basic Architectural Techniques (N) . . . . 3 Cr. Hrs.
This unit outlines the Architectural Technology program, class procedures, and office safety practices. It introduces the attitudes, skills, and knowledge necessary for world-of-work success in this field. Drawing exercises cover architectural freehand lettering, sketch technique, drafting instrument use, sheet layout, basic dimensioning, and line quality.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

ATE 105 Three Dimensional Drawing Methods (N) . . . . . 3 Cr. Hrs.
This unit covers an architectural approach to the fundamentals of three-view orthographic projection together with isometric, oblique, and perspective drawing techniques.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

ATE 106 Construction Drawing Fundamentals (N) . . . . . 3 Cr. Hrs.
Covered in this unit is the concept of architectural construction drawings ("working drawings" or "blueprints"), their creation, content, and sheet sequencing. An abbreviated set of construction drawings for a small wood frame building will be drawn from notes and sketches provided through interviews with a hypothetical client. Drafting technique and fundamentals of wood frame construction will be emphasized.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

ATE 107 Residential Construction Drawings (N) . 6 Cr. Hrs.
Here, the steps for planning and drawing a residence will be examined and followed from initial client contact through completed construction drawings. Student drawings for this unit will include floor plans, exterior elevations, wall sections, and building sections.
Theory 40 Hrs. - Lab. 80 Hrs. 120 Ct. Hrs.

ATE 108 Residential Construction Details (N) . . . 3 Cr. Hrs.
In this unit, the set of residential construction drawings started in the previous unit will be completed, checked, corrected, reproduced, and bound. Emphasis here will be on detailing selected portions of the structure and components thereof.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

ATE 109 Light Commercial Construction Drawings (N) . . . . . 6 Cr. Hrs.
Here, the student will learn the architectural drafting techniques and basic construction methods involved in a light commercial building of rigid frame construction. Student drawings will include plans and exterior elevations.
Theory 40 Hrs. - Lab 80 Hrs. 120 Ct. Hrs.

ATE 110 Light Commercial Construction Details (N) . . . . . 6 Cr. Hrs.
The student will learn drafting procedures involved in detailing specified portions of the light commercial building started in the previous unit. Student drawings will include wall sections, building sections; door, window, and stair sections; and other selected details.
Theory 40 Hrs. - Lab 80 Hrs. 120 Ct. Hrs.

ATE 200 Light Commercial Design (N) . . . . . 6 Cr. Hrs.
Given a copy of building requirements desired by a hypothetical client, the student will develop the ability to design (plan) the building with emphasis on efficient circulation, economical use of materials in conformance to local zoning and building codes. Drawings will further develop and reflect a sense of aesthetic design values.
Theory 40 Hrs. - Lab 80 Hrs. 120 Ct. Hrs.

ATE 205 Structural Design (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn basic design (sizing) of beams and columns in wood, steel, and concrete.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

ATE 206 Structural Framing Plans (N) . . . . . 3 Cr. Hrs.
Here, the student will learn to produce a set of structural framing plans including the design of roof and floor systems, steel beams, and columns.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

ATE 207 Air Conditioning Design (N) . . . . . 3 Cr. Hrs.
This unit covers basic design of hot water heating, chilled water cooling, evaporative cooling, air heating and cooling, and ventilation systems.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

ATE 208 Electrical Design (N) . . . . . 3 Cr. Hrs.
Here, the student will learn basic design of electrical systems including lighting fixtures, outlets and receptacles, mechanical equipment electrical requirements, sizing conduits and conductors, circuit breakers, subpanels, main distribution panels, safety devices, and building electrical services.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

ATE 209 Plumbing Design (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn basic design of plumbing systems including the sizing of waste lines and venting, hot and cold water piping, and gas piping.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

ATE 210 Public Building Design (N) . . . . . 6 Cr. Hrs.
Given a copy of building requirements desired by a hypothetical client, the student will develop the ability to design (plan) a public building with emphasis on efficient, economical planning, local zoning and building codes, and building elevations which will reflect and further develop a sense of aesthetic building values.
Theory 40 Hrs. - Lab. 80 Hrs. 120 Ct. Hrs.

ATE 215 Mechanical Equipment of Buildings (N) . . . . . 3 Cr. Hrs.
The student will be able to identify plumbing, heating and air conditioning, electrical symbols, systems, and their components; or with the permission of the instructor, the student will participate in one of the following: additional architectural techniques, department related electives, cooperative work experience, or independent study.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

ATE 216 Site Planning (N) . . . . . 6 Cr. Hrs.
The student will develop the design of a multi-family housing development including building orientations, traffic and pedestrian circulation, off street parking, landscaping, site grading, utilities, and densities.
Theory 40 Hrs. - Lab. 80 Hrs. 120 Ct. Hrs.

ATE 217 Architectural Surveys (N) . . . . . 3 Cr. Hrs.

The student will develop the ability to utilize the surveyor's transit, level, rod, chain, and compass in the field to obtain information for classroom site plan development.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

ATE 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

ATE 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Architectural Technology Program, and is outside the program offering.
90 Hrs. Lab. 90 Ct. Hrs.

CIVIL ENGINEERING TECHNOLOGY (R)

Certificate or Associate Degree

An intensive preparation for individuals to fill positions as construction or engineering assistants, draftsmen, and laboratory aides in the broad field of civil engineering.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
CET 100	Civil Engineering Drafting	4	75
CET 105	Contracts & Specifications	3	45
CET 106	Building Construction Methods & Estimating	3	45
CET 107	Civil Engineering Technology Laboratory	6	120
CET 200	Structures	5	98
CET 205	Applied Hydrology	4	68
CET 206	Technical Project	3	60
SUR 100	Surveying — Field Work Elementary	11	218
SUR 200	Surveying — Field Work Advanced	11	218
SUR 205	Photogrammetry For Surveyors	6	109
		56	1056

Required Related Courses

MAT 111	Introductory Algebra	3	45
	Elective	4	60
ENG 231	Technical Writing	3	45
CHE 101	Fundamentals Of Chemistry I	4	90
PHY 101	Fundamentals Of Physics	3	75
EAS 101	Physical Geology	4	90
	English Elective	3	45
		24	450
		80	1506

Additional Major Courses

CET 297	Cooperative Work Experience	2-9	60-375

CIVIL ENGINEERING TECHNOLOGY (R)

CET 100 Civil Engineering Drafting ..... 4 Cr. Hrs.
Basic course in graphical representation including geometric construction, concepts of views, sketching, pictorial representation. Emphasis on graphic procedures as used in civil engineering.
30 Hrs. Theory - 45 Hrs. Lab. 75 Ct. Hrs.

CET 105 Contracts & Specifications ..... 3 Cr. Hrs.
The Law of Contracts and its application to construction and engineering activities. The drafting of specifications for labor, material, processes, and construction performance.
45 Hrs. Theory 45 Ct. Hrs.

CET 106 Building Construction Methods & Estimating ..... 3 Cr. Hrs.
Elementary types of buildings, construction methods, building materials, design, construction details, cost estimates.
45 Hrs. Theory 45 Ct. Hrs.

CET 107 Civil Engineering Technology Laboratory ..... 6 Cr. Hrs.
Investigation of concrete, soils and bituminous materials, classification, strength and deformation characteristics, sampling and testing these materials for engineering purposes.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

CET 200 Structures ..... 5 Cr. Hrs.
Prerequisite: CET 100 & Introduction To Algebra
Mechanical properties of materials, stresses and strain in members subjected to tension, compression and shear. Elementary structural analysis.
30 Hrs. Theory - 68 Hrs. Lab. 98 Ct. Hrs.

CET 205 Applied Hydrology ..... 4 Cr. Hrs.
Prerequisite: SUR 100
Rainfall, runoff, urban and rural drainage, flow measurements in conduits, and open channels. Basic fluid mechanics.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

CET 206 Technical Project ..... 3 Cr. Hrs.
Prerequisite: Completion of at least 50 hours of instruction in the Civil Engineering Technology curricula.
Independent study and research on a subject of the student's own choice in the field of Civil Engineering.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

CET 297 Cooperative Work Experience ..... 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 45-360 Hrs. Lab. 60-375 Ct. Hrs.

SUR 100 Surveying — Field Work, Elementary ..... 11 Cr. Hrs.
Prerequisite: Consent of instructor
Use, care and theory of the chain and level, introduction to transit, field practice in chaining, elevations with hand and engineer level, and introductory transit work. Office practice stresses theory and importance of field notes.
60 Hrs. Theory - 158 Hrs. Lab. 218 Ct. Hrs.

SUR 200 Surveying — Field Work, Advanced ..... 11 Cr. Hrs.
Prerequisite: SUR 100, SUR 101, SUR 105
Use, care and theory of transit, modern levels, theodolites, EDM and plane table, Field and office practice with horizontal and vertical angles applied to line, curve area problems, and astronomical observations. Field problems stress application, accuracy and evaluation of the field data.
60 Hrs. Theory - 158 Hrs. Lab. 218 Ct. Hrs.

SUR 205 Photogrammetry For Surveyors ..... 6 Cr. Hrs.
Prerequisite: SUR 201
The interpretation and evaluation of aerial photographs with photogrammetric instruments from pocket stereoscope to projection plotters.
53 Hrs. Theory - 56 Hrs. Lab. 109 Ct. Hrs.

COMMERCIAL ART (A)

Associate Degree

This program is designed to give students the skill level necessary for job entry in this field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
COA 100	Lettering and Typographic Design.	4	80
COA 105	Typography and Layout	4	80
COA 106	Descriptive Drawing.	4	80
COA 200	Advertising Design and Rendering	4	80
COA 205	Creative Graphic Design	4	80
COA 206	Art Preparation for Reproduction	4	80
COA 207	Advanced Art Preparation for Reproduction	4	80
COA 208	Illustration	4	80
COA 209	Three Dimensional Advertising	4	80
ART 101	Basic Design I	3	90
ART 102	Basic Design II	3	90
ART 111	Basic Drawing I	3	90
ART 112	Basic Drawing II	3	90
ART 211	Advanced Drawing	3	90
ART 271	Printmaking I	3	90
GRA 120	Process Camera and Halftones	6	120
PHO 100	Fundamentals of Photography	4	80
		64	1460

Required Related Courses

English	3	45
Humanities, Literature or Psychology Elective	3	45
Art, Photography or Cooperative Work Elective	3-4	80-90
Principles of Marketing, Speech, Technical Illustration, or Independent Study Elective	3	45-60
	12-13	215-240
TOTAL REQUIRED HOURS	76-77	1675-1700

COMMERCIAL ART (A)

COA 100 Lettering and Typographic Design . . . . . 4 Cr. Hrs.
Designed to introduce the student to the concepts of typography as applied to graphic communication. Exercises in both layout and finished lettering for advertising and logo design. Study of type recognition and typographic technology covered.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 105 Typography and Layout . . . . . 4 Cr. Hrs.
Exercises in creating letterforms, indicating photography and illustration and basic copy fitting methods. Stress given to creative solutions of graphic problems.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 106 Descriptive Drawing. . . . . 4 Cr. Hrs.
This course is designed to introduce methods of accurate drawing. Included are exercises in measuring, ruling, scaling, shading in ink and precise drawings of objects in two and three dimensions.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 200 Advertising Design and Rendering . . . . 4 Cr. Hrs.
Prerequisite: COA 100 — Lettering and Typographic Design; COA 105 — Typography and Layout; COA 106 — Descriptive Drawing; ART 101 — Basic Design I; ART 111 — Basic Drawing I.
Designed to produce rendering skills in both line and continuous tone. Opaque water colors, India ink, scratch board, Ross board, cut papers and films are applied to a variety of graphic design problems.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 205 Creative Graphic Design . . . . . 4 Cr. Hrs.
Prerequisite: COA 200 — Advertising Design and Rendering.
Designed to give student further experience in designing trademarks, packaging, symbols, audio visual art preparation, and signing as well as producing individual pieces that complete portfolios.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 206 Art Preparation for Reproduction . . . . . 4 Cr. Hrs.
Prerequisites: COA 100 — Lettering and Typographic Design; COA 105 — Typography and Layout; COA 106 — Descriptive Drawing.
Designed to introduce the student to the necessary procedures for the production of type and paste up in simple one and two color printing. Emphasis placed on development of basic manual skills, precision measuring and copy proofing. Marking copy procedures are covered.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 207 Advanced Art Preparation for Reproduction . . . . . 4 Cr. Hrs.
Prerequisite: COA 206 — Art Preparation for Reproduction.
Designed to develop further competency in skills acquired in COA 206 — Art Preparation for Reproduction. Exploration and exercises in production of more complicated camera ready art including: hand color separations, ink and paper specification, type mark-up, computer type setting, audio visual art, packaging mechanicals and effects of printing production on design.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

COA 208 Illustration . . . . . 4 Cr. Hrs.
Prerequisites: ART 101 — Basic Design I; ART 111 — Basic Drawing I; COA 200 — Advertising Design and Rendering; COA 106 — Descriptive Drawing.
Designed to creatively apply knowledge gained in basic drawing, basic design and descriptive drawing to advertising illustration. Current trends, printing production, media, and techniques are applied to course exercises.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

COA 209 Three Dimensional Advertising . . . . . 4 Cr. Hrs.
Prerequisite: COA 106 — Descriptive Drawing.
Designed to give the student experience in the creation of three dimensional displays as they relate to retail sales and informational displays. Course includes exercises in the creation of retail display and mockups for three dimensional advertising.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

ART 101 Basic Design I . . . . . 3 Cr. Hrs.
Fundamentals of form, color, visual perception, principles of composition, organization and structure introduced with experimentation in two dimensional design.

ART 102 Basic Design II . . . . . 3 Cr. Hrs.
Continuation of ART 101 — Basic Design I, with advanced problems in form, color, visual perception, principles of composition, organization and structure in both two and three dimensional design.

ART 111 Basic Drawing I. . . . . 3 Cr. Hrs.
Freehand drawing covering a selection of subjects, proportion, perspective, line, texture, value and composition. Media include pencil, conte crayon, charcoal and ink.

ART 112 Basic Drawing II . . . . . 3 Cr. Hrs.
Introduction of color into drawing. Drawing in varied and mixed media, emphasizing experimentation. Broad range of size and material stressing composition and concept. Introduction to drawing human figure.

ART 211 Advanced Drawing I . . . . . 3 Cr. Hrs.
Advanced problems in freehand drawing. Emphasis on experimentation using a variety of media and greater emphasis on drawing the human figure.

ART 271 Printmaking I . . . . . 3 Cr. Hrs.
A study of basic hand printing techniques: Lithography, etching, wood engraving, block printing, and silkscreen printing.

GRA 120 Process Camera and Halftones . . . . . 6 Cr. Hrs.
(Non-Graphic Art Majors)
In this unit, the student will learn theory, use, parts plus types of process camera; films, papers, chemicals, proportions, tint screens, filters, gray scales. Theory of halftones, calibrate screens, compute flash chart, shoot halftones.
48 Hrs. Theory - 72 Hrs. Lab. 120 Ct. Hrs.

PHO 100 Fundamentals Of Photography . . . . . 4 Cr. Hrs.
Introduction to basic black and white techniques — seeing with the camera, camera types, films and exposure, negative processing, enlargers, print finishing and mounting. Emphasis upon sound camera and darkroom techniques, producing good negatives and prints, developing a personal awareness of expression and communication through the medium of photography.
32 Hrs. Theory - 48 Hrs. Lab. 80 Ct. Hrs.

DRAFTING FOR INDUSTRY (A, R)
Certificate or Associate Degrees
DRAFTING FOR INDUSTRY (DRI) (A, R)
and
DRAFTING FOR CONSTRUCTION (DRC) (R)

I. Drafting for Industry
(First Year — Certificate)
3 credits can be earned by successfully meeting each of the objectives listed for each module DRI 105 through DRI 117. (DRI 105 is a six week module for six credit hours.)* These modules must be completed in the order as listed in the catalog, plus required related courses.

II. Drafting for Industry — Option A
(Second Year — Associate Degree)
3 credits can be earned by successfully meeting each of the objectives listed for each module as follows:
*DRI 105 Through DRI 117
DRI 200 Through DRI 217
These modules must be completed in the order as listed in the catalog, plus required related courses.

III. Drafting for Construction — Option B
(Second Year — Associate Degree)
3 credits can be earned by successfully meeting each of the objectives listed for each module as follows:
**DRI 105 Through DRI 117
DRI 205, 206, and 216
DRC 200, 208, 209, 210, 215 and 217.
These modules must be completed in the order as listed in the catalog, plus required related courses.

IV. Modules for day classes will be taught in three week increments in the order listed in the catalog *(DRI 105 is a 6 week module for 6 credit hours.)

Each module will total sixty contact hours to be arranged in fifteen, four-hour daily class periods (over a three week span.)

Students will carry a minimum drafting load of six credits, except when less than that number will be required for graduation. A full load is fifteen credits.

Depending on class structure, night class modules may be taught in either of two ways:
1. Three week modules, four nights per week, five hours per night for 15 credits.
2. A specific module may consist of one four hour session each week for fifteen weeks for each 3 credits taken through 12 credits. (6 credits minimum load.)

DRAFTING FOR INDUSTRY (A, R)
Certificate and Option A
Associate Degree

The Drafting for Industry program, prepares students for job entry positions as a member of the drafting and design team for industrial plants, engineering and manufacturing firms, and government agencies.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DRI 105	Introduction to Drafting and Sketching	6	120
DRI 106	Sections and Conventions	3	60
DRI 107	Basic Dimensioning Practices	3	60
DRI 108	Basic Descriptive Geometry and Auxiliary View Projection	3	60
DRI 109	Perspectives, Presentation and Ink Drawing Procedures	3	60
DRI 110	Intersections and Developments	3	60
DRI 115	Mechanical Detail Problems	3	60
DRI 116	Introduction to Assembly and Detail Problems	3	60
DRI 117	Mechanical Assembly and Detail Projects	3	60
DRI 200	Industrial Plant Development	3	60
DRI 205	Architectural Plans and Details	3	60
DRI 206	Civil Plans and Details	3	60
DRI 207	Structural Plans and Details	3	60
DRI 208	Large Mechanical Equipment	3	60
DRI 209	Mechanical Equipment Details	3	60
DRI 210	Material Handling Concepts and Conveying Methods	3	60
DRI 215	Power Transmission Systems and Installation Details	3	60
DRI 216	Industrial Piping, Utility and Instrument Considerations	3	60
DRI 217	Installation Drawings and Details	3	60
		60	1200

DRAFTING FOR CONSTRUCTION (R)
Option B, Associate Degree

The Drafting For Construction Program, prepares students for job entry positions as a member of the drafting and design teams for engineering construction firms, steel fabricating companies, public utilities, and government agencies.

NOTE: All courses must be taken in numerical sequence, unless approved by a Drafting Instructor.

Prerequisites: Completion of DRI 105 through DRI 117.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DRC 200	Introduction To Architectural Drafting	3	60
DRI 205	Architectural Plans & Details	3	60
DRI 206	Civil Plans & Details	3	60
DRI 207	Structural Plans & Details	3	60
DRC 208	Advanced Structural Detailing	3	60
DRC 209	Architectural Development Of An Industrial Facility	3	60
DRC 210	Structural Development Of An Industrial Facility	3	60
DRC 215	Architectural-Structural Details	3	60
DRI 216	Industrial Piping, Utility & Instrumentation Considerations	3	60
DRC 217	Finalizing The Industrial Facility Project	3	60
		60	1200

Required Related Courses
Certificate Program Requirements*

*SCI 105	The Metric System	1	15
PHY 101	Fundamentals of Physics	3	45
	*English Elective	3	45
	*Trigonometry (MAT 102 MIN.)	3	45
	Social Science Elective	3	45
	Elective	3	45
		16	270
	TOTAL REQUIRED HOURS	76	1470

Additional Major Courses

DRI 100	Orientation to Drafting (R)	3	60
DRI 135	Blueprint Reading (A)	3	60
DRI 297	Cooperative Work Experience	2-9	60-375
DRI 299	Independent Study	3	90
BTR 125	Blueprint Reading For Construction Trades (R)	4	68
BTR 126	Blueprint Reading For Mechanical Trades (R)	4	68
BTR 127	Building Inspection For Construction Trades (R)	4	68
BTR 128	Estimating Residential Construction Costs (R)	4	68
BTR 129	Construction Materials I (R)	4	68
BTR 130	Construction Materials II (R)	4	68

DRAFTING FOR INDUSTRY (A, R)

DRI 105 Introduction to Drafting and Sketching. . . . . 6 Cr. Hrs.
Introduction, lettering, linework, geometric construction, reproduction, sketching, orthographic projections and isometrics. Orthographic and isometric drafting practices.
30 Hrs. Theory — 90 Hrs. Lab. 120 Ct. Hrs.

DRI 106 Sections and Conventions . . . . . 3 Cr. Hrs.
Sectional drawings and conventional representation of half, full, alligned, revolved, offset and isometric sections.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 107 Basic Dimensioning Practices . . . . . 3 Cr. Hrs.
Basic cumulative, coordinate, fractional, decimal, and metric dimensions. Fastener details and nomenclature as applied to cast and machined parts.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

DRI 108 Basic Descriptive Geometry and Auxiliary View Projection . . . . . 3 Cr. Hrs.
Line Problems: True length, point view, bearing, slope and azimuth.
Plane Problems: Edge view, dihedral angle, true size and shape of any plane. True angle between two lines, true length of a line by the principle line method.
Shortest Distance Between: Parallel and non-parallel lines, lines and planes.
Intersecting: Lines, lines and planes, and planes.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 109 Perspectives, Presentation, and Ink Drawing Procedures. . . . . 3 Cr. Hrs.
One and two point perspectives, presentation charts, diagrams and drawings, ink and Leroy lettering practices.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 110 Intersections and Developments . . . . . 3 Cr. Hrs.
Flat and curved surface intersections and developments applicable to sheet metal and heavy plate components. (Flat, prism, cylindrical, and conical elements.)
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 115 Mechanical Detail Problems. . . . . 3 Cr. Hrs.
Cast, welded and machines mechanical parts, detailed and dimensioned using cumulative/fraction, coordinate/decimal and metric dimensioning systems, shop practices and basic tolerances, introduction to machinery handbook.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 116 Introduction to Assembly and Detail Problems . . . . . 3 Cr. Hrs.
Cast, welded and machined mechanical assemblies and their necessary details and material lists.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 117 Mechanical Assembly and Detail Projects . . . . . 3 Cr. Hrs.
Operating mechanical devices and their resulting details and material lists. Introduction to precision dimensioning techniques.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 200 Industrial Plant Development . . . . . 3 Cr. Hrs.
Process flow diagrams, equipment relationships, equipment and building relationships and preliminary drawings as related to the production processes and requirements. (This unit will form a basis from which future projects will be derived. Group projects will be used; models and templates will be used as needed.)
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 205 Architectural Plans and Details . . . . . 3 Cr. Hrs.
Emphasis on light commercial and industrial architectural construction methods, plans and details; masonry, concrete and steel; Sweets catalogs.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 206 Civil Plans and Details . . . . . 3 Cr. Hrs.
Site plans, various civil, topographic, and geological considerations; traverses, contours, building relationships.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 207 Structural Plans and Details . . . . . 3 Cr. Hrs.
Structural elements of concrete and steel, framing and details; beam, column, foundation details; use of steel construction manual and Smolye's tables.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 208 Large Mechanical Equipment. . . . . 3 Cr. Hrs.
Development of large mechanical assemblies such as rotary dryers, vessels, dust collectors, hoppers and bins, separators and similar equipment with their sub-assemblies and details. Use of Smoley's tables.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 209 Mechanical Equipment Details. . . . . 3 Cr. Hrs.
A continuation of DRI 208 — Large Mechanical Equipment — involving the development of pertinent detailed drawings for equipment originating in DRI 208.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 210 Material Handling Concepts and Conveying Methods . . . . . 3 Cr. Hrs.
Basic principles, concepts and systems as used in material handling: methods, materials, bulk or packaged products, equipment and building factors. Develop plans and details for a material handling system as determined by preliminary drawings from DRI 209, i.e., crane, hoist, monorail, bucket elevator, chain, belt, or roll conveyor, etc.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 215 Power Transmission Systems and Installation Details. . . . . 3 Cr. Hrs.
A continuation of DRI 210 — Material Handling Concepts and Conveying Methods — involving pertinent details for a conveyor system including belt and chain take-up methods, selection and installation details of fractional horsepower chain and belt drive systems, motors, gear motors, gear boxes, mounting methods, belt and chain guards.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 216 Industrial Piping, Utility and Instrumentation Consideration . . . . . 3 Cr. Hrs.
Details for industrial piping, electrical, hydraulic, pneumatic systems; plumbing, heating, ventilating and air conditioning and considerations.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 217 Installation Drawings and Details . . . . . 3 Cr. Hrs.
Methods, plans and details for the installation of various types of industrial equipment in a new or existing plant situation, "as-built" drawings. May also be used to finalize equipment drawings from earlier courses.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRAFTING FOR CONSTRUCTION (R)

DRC 200 Introduction To Architectural Drafting. . . . . 3 Cr. Hrs.
Wood construction, emphasis on detailing from a given floor plan; foundation plan, wall section, cross section, stair section, fireplace, elevations, etc.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

DRC 208 Advanced Structural Detailing. . . . . 3 Cr. Hrs.
Use of AISC steel construction manual for detailing steel beams and columns for shop drawings, use of Smoley's tables. Concrete details.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

DRC 209 Architectural Development Of An Industrial Facility. . . . . 3 Cr. Hrs.
Work with building relationships, floor plans and elevations for an industrial facility as coordinated with module DRI 200, of the "Drafting For Industry" program.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

DRC 210 Structural Development Of An Industrial Facility . . . . . 3 Cr. Hrs.
Develop the structural aspects of an industrial facility as planned in DRC 209.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

DRC 215 Architectural-Structural Details . . . . . 3 Cr. Hrs.
Continuing the work of DRC 209 and 210, pertinent details relating to the architecture and structure of the building complex as well as structural considerations for installation of equipment within the facility will be developed.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

DRC 217 Finalizing The Industrial Facility Project . . . . . 3 Cr. Hrs.
Finalize plans and details. Check against codes and specifications, construction methods and procedures; last minute modifications and "as-builts."
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

ADDITIONAL MAJOR COURSES (A, R)

DRI 100 Orientation to Drafting (A, R). . . . . 3 Cr. Hrs.
An exploration of basic drafting concepts and skill development. Sketching techniques, orthographic projection, isometric principles sections and conventions, basic dimensioning techniques and applications to specific fields will be studied. This course fully fills elective drafting requirements for non-drafting majors, and may be taken by any non-drafting student. This course will not apply as credit to the Drafting for Industry or Drafting for Construction Programs.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 135 Blueprint Reading (A). . . . . 3 Cr. Hrs.
Introductory course in reading and interpretation of blueprints used by technicians. Emphasis is placed on visualization, sketching, and various systems of projection.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

DRI 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience. By pre-arrangement and permission of the instructor only.
15 Hrs. Theory - 45-360 Hrs. Lab. 60-375 Ct. Hrs.

DRI 299 Independent Study. . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Drafting Program, and outside the program offerings. By prearrangement and permission of the instructor only.
90 Hrs. Lab. 90 Ct. Hrs.

BTR 125 Blueprint Reading For Construction Trades (R). . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 126 Blueprint Reading For Mechanical Trades (R) . . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the mechanical trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 127 Building Inspection For Construction Trades (R). . . . . 4 Cr. Hrs.
Examination and evaluation of construction work in progress. Comparing and contrasting with recognized norms or standards to meet state and local building requirements.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 128 Estimating Residential Construction Costs (R). . . . . 4 Cr. Hrs.
Construction mathematical review, plan reading, specifications, excavation, take off estimates, concrete foundations, footings, caissons, and slab. Rough structure, and full enclosure.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 129 Construction Materials I (R). . . . . 4 Cr. Hrs.
Terminology, nomenclature, board footage, lumber, plywood, millwork, brick and cement will be covered by lecture and field trips.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

BTR 130 Construction Materials II (R) . . . . . 4 Cr. Hrs.
Roofing, drywall, steel products, beams, stress graded lumber, and building codes will be covered by lecture and field trips.
45 Hrs. Theory - 23 Hrs. Lab. 68 Ct. Hrs.

GRAPHIC ARTS (A)
Certificate or Associate Degree

This program will prepare the student with job entry skills to do most operations necessary on the process camera, offset presses, basic bindery, stripping, and general layout and composition work.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
GRA 100	Introduction to Graphic Arts	3	60
GRA 105	Beginning Process Camera I	3	60
GRA 106	Halftones on Process Camera	3	60
GRA 107	Composition I	3	60
GRA 108	Process Camera II and Composition II	3	60
GRA 109	Beginning Offset Presses	3	60
GRA 110	Stripping and Small Bindery	3	60
GRA 115	Intermediate Offset Presses	3	60
GRA 116	Paper, Management and Production	3	60
GRA 117	Inks, Plates and Introduction to Large Bindery	3	60
GRA 200	Process Color Separation	3	60
GRA 205	Process Color Printing	3	60
GRA 206	Computerized Typesetting	3	60
GRA 207	Raised Printing	3	60
GRA 208	Basic Machine Maintenance	3	60
GRA 209	Silkscreening for Graphic Arts	1	20
TEI 201	Airbrush I	3	60
SEC 110	Typing I	4	75
PHO 100	Fundamentals of Photography	4	80
COA 105	Typography and Layout	4	80
	Independent Study	5	100
		66	1315

Required Related Courses

ENG	English Elective	3	45
PSY	Psychology Elective	3	45
MAT	Mathematics Elective	3	45
	TOTAL REQUIRED HOURS	75	1450

Additional Major Courses

GRA 120	*Process Camera and Halftones	6	120
GRA 130	**Intermediate Lithographic Equipment Maintenance and Repair	3	60

* Non-Graphic Art Majors
** Specialty Classes

GRAPHIC ARTS (A)

GRA 100 Introduction to Graphic Arts . . . . . 3 Cr. Hrs.
In this unit, the student will learn the history of printing, illegal printing, pica pole, grid sheets, border tape, thumbnails, comprehensive, waxer and beginning paste-up. Headliner, types, VariTyper, paste-up, harmony and balance and design, letterheads and ads. Proofreading, newspaper pastepup and corrections, and brochures.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 105 Beginning Process Camera I . . . . . 3 Cr. Hrs.
In this unit, the student will learn theory, use, parts plus types of process camera; films, papers, chemicals proporttions, tint screens, filters, gray scales for process camera. Two color card paste-up which includes a window and picture for halftones.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 106 Halftones on Process Camera . . . . . 3 Cr. Hrs.
In this unit, the student will learn theory of halftones, calibrate screens, compute flash chart, shoot halftones. Halftone bumps, dropouts design, paste-up two color personal business card and begin shooting. Assignments of paste-up and camera including weak copy, percentage plus f-stop changes, filter factors.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 107 Composition I . . . . . 3 Cr. Hrs.
In this unit, the student will do business cards, transfer type, ad helpers. Design, paste-up with picture, three panel brochure and shooting of brochure. Forms, index cards including two sided, ruling-pen, border tape and scribe.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 108 Process Camera II and Composition II. . . . . 3 Cr. Hrs.
This unit is a continuation of GRA 105, 106 and 107. With review of line shots, halftones, design, paste-up two color cards and shooting of cards.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 109 Beginning Offset Presses . . . . . 3 Cr. Hrs.
In this unit, the student will learn offset press set-up for: paper feeder, register board, delivery, and printing head.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 110 Stripping and Small Bindery . . . . . 3 Cr. Hrs.
In this unit, the student will learn simple, advanced, book and process color stripping, register pins. Small bindery, paper drill, power paper cutter, book bindings, Velo bind, saddle stitch, perfect bind, table model friction folder, perforating, scoring, and slitting.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 115 Intermediate Offset Presses . . . . . 3 Cr. Hrs.
In this unit, the student will learn continued beginning offset presses, including quick copy, pressure settings and adjustments, register techniques, settings, 25" press, multi-color registering and running.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 116 Paper, Management and Production . . . 3 Cr. Hrs.
In this unit, the student will learn buying, estimating, pricing, job pricing, job planning and scheduling, work flow and plant layout.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 117 Inks, Plates and Introduction to Large Bindery . . . . . 3 Cr. Hrs.
In this unit, the student will learn kinds of ink, manufacture and characteristics, ink color mixing and additives. Types, brands, characteristics, and processing of offset plates. Basics of air fed folder and techniques.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 120 Process Camera and Halftones (Non-Grapic Art Majors) . . . . . 6 Cr. Hrs.
In this unit, the student will learn theory, use, parts plus types of process camera; films, papers, chemicals, proportions, tint screens filters, gray scales. Theory of halftones, calibrate screens, compute flash chart, shoot halftones.
48 Hrs. Theory - 72 Hrs. Lab 120 Ct. Hrs.

GRA 130 Intermediate Lithographic Equipment Maintenance and Repair (Specialty Class) . . . . . 3 Cr. Hrs.
In this unit, the student will learn machine settings, adjustments and repair of offset equipment, such as: Multiliths, A.B. Dicks, Chief 15, 25" press, process camera, and other related equipment.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 200 Process Color Separation. . . . . 3 Cr. Hrs.
In this unit, the student will learn process color separation with use of filters. Separations using both reflection and transmission copy. Transmission densitometer, theory and use of direct and indirect separations.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 205 Process Color Printing . . . . . 3 Cr. Hrs.
Set-up, register and printing of process color separation. Techniques and features of 25" presses, changing and setting of molleton covers.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 206 Computerized Typesetting. . . . . 3 Cr. Hrs.
Use of six level perforated tape, functions and use of perforating keyboard, theory and use of tape driven computerized typesetter and paper development.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 207 Raised Printing. . . . . 3 Cr. Hrs.
Theory and use of raised printing, use and functions and set up of three section air fed folder, set-up of four pocket Rosback signature collator.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 208 Basic Machine Maintenance. . . . . 3 Cr. Hrs.
Basic settings, lubrication, adjustments and minor repair of offset equipment such as presses, cameras, vacuum pumps, etc.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GRA 209 Silkscreening for Graphic Arts. . . . . 1 Cr. Hr.
This is designed to introduce the student to the various methods of commercial silkscreening such as direct photo, transfer photo and hand cut stencils as well as introduce the student to the types of equipment and inks used.
8 Hrs. Theory - 12 Hrs. Lab 20 Ct. Hrs.

COA 105 Typography and Layout . . . . . 4 Cr. Hrs.
Exercises in creating letterforms, indicating photography and illustration and basic copy fitting methods. Stress given to creative solutions of graphic problems.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 100 Fundamentals of Photography . . . . . 4 Cr. Hrs.
Introduction to basic black and white techniques — seeing with the camera, camera types, films and exposure, negative processing, enlargers, print finishing and mounting. Emphasis upon sound camera and darkroom techniques, producing good negatives and prints, developing a personal awareness of expression and communication through the medium of photography.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

SEC 101 Typing I . . . . . 4 Cr. Hrs.
For students without previous typewriting instruction. Introduces keyboard, machine parts, correct techniques and accuracy on typewritten work. Strong emphasis on numbers. Foundations on typewritten applications: centering, letters, tabulations, and manuscripts. Designed for students with either vocational or non-business objectives.
75 Ct. Hrs.

TEI 201 Airbrush I . . . . . 3 Cr. Hrs.
This course provides training in preparing art for technical manuals and diversified art. Airbrush techniques are used in shading techniques and photo retouching.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

INDUSTRIAL MECHANICAL DRAFTING TECHNOLOGY (N)

2-Yr. Certificate and/or Associate Degree

This program provides the student with job entry skills for mechanical drafting, upgrading for those in the drafting field, and help for students in other related occupations to read blueprints.

Industrial Mechanical Drafting is structured on a 3 week, 60 contact hour module; however, a great deal of flexibility exists. A full load would be five of the three hour modules offered concurrently.

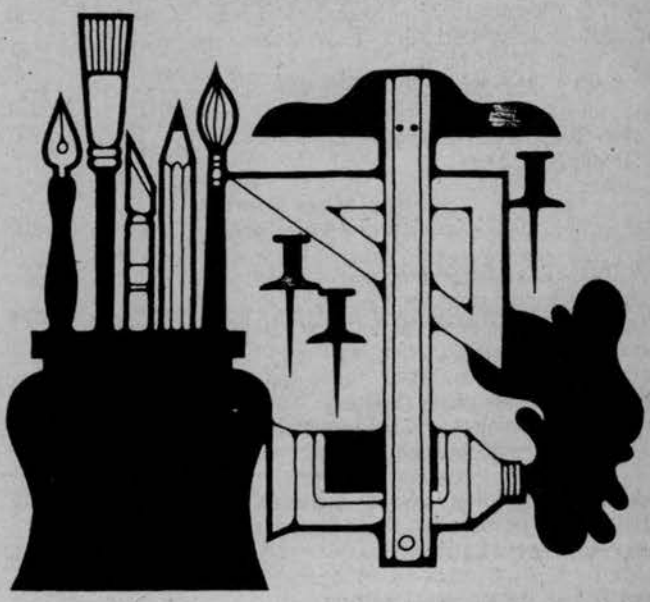
Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors. A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty advising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Drafting program uses an individualized, self paced, multimedia instructional approach. Faculty lectures and/or small group demonstration is incorporated with hands-on practical laboratory experience.

New students need not wait for the next formal registration as they may be admitted to the drafting program at any time providing an opening exists.

A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skills and knowledge is achieved.



Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
IMD 101	Mechanical Drafting Theory and Techniques I	3	60
IMD 102	Mechanical Drafting Theory and Techniques II	3	60
IMD 103	Mechanical Drafting Theory and Techniques III	3	60
IMD 111	Machine Detail and Assembly Drawing I	3	60
IMD 112	Machine Detail and Assembly Drawing II	3	60
IMD 113	Machine Detail and Assembly Drawing III	3	60
IMD 114	Machine Detail and Assembly Drawing IV	3	60
IMD 121	Introduction to Casting Drawing	3	60
IMD 122	Introduction to Sheet Metal Drawing	3	60
IMD 123	Introduction to Electro-Mechanical Drawing	3	60
IMD 200	**Introduction to Inking**	3	60
IMD 205	Introduction to Technical Illustration	3	60
IMD 206	Introduction to Gears and Cams	3	60
IMD 207	Introduction to Pipe Drawing	3	60
IMD 208	Introduction to Welding Drawing	3	60
IMD 211	Industrial Drafting Technology I	3	60
IMD 212	Industrial Drafting Technology II	3	60
IMD 213	Industrial Drafting Technology III	3	60
IMD 214	Industrial Drafting Technology IV	3	60
IMD 215	Industrial Drafting Technology V or one of the following: Electives, Independent Study, or Cooperative Work Experience	3	60
		60	1200

Required Related Courses

English Elective	3	45
Math Elective	5	80
Social Science Elective	3	45
	11	170
TOTAL REQUIRED HOURS	71	1370

Additional Major Courses

IMD 297	Cooperative Work Experience	3	105
IMD 299	Independent Study	3	90

INDUSTRIAL MECHANICAL DRAFTING TECHNOLOGY (N)

IMD 101 Mechanical Drafting Theory and Techniques I (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn careers in drafting, tools and equipment, lettering, line work, reproduction equipment, measurement, instrument drawing, freehand sketching, geometric construction, and orthographic projection.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

IMD 102 Mechanical Drafting Theory and Techniques II (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn sectioning, pictorial drawing (three dimensional), auxiliary views, intersections and developments, and threads and fasteners.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

IMD 103 Mechanical Drafting Theory and Techniques III (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn dimensioning techniques, geometric curves and tangencies,
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

IMD 111 Machine Detail and Assembly Drawing I (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to procude working drawings and assemblies according to standards. It is designed to teach as closely as possible the way projects are handled in industry. At the completion of this unit, the student will have the ability to develop more complex drawings with less information provided and learn to properly dimension mating parts.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 112 Machine Detail and Assembly Drawing II (N) . . . . . 3 Cr. Hrs.
The student will learn working drawings, production detail and assembly drawings, precision dimensioning, tolerancing, and material selection.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 113 Machine Detail and Assembly Drawing III (N) . . . . . 3 Cr. Hrs.
The student will be assigned projects which will require the use of previously acquired skills, and he will learn geometric dimensioning and tolerancing principles.
Theory 15 Hrs. - Lab 45 Hrs. 60 Ct. Hrs.

IMD 114 Machine Detail and Assembly Drawing IV (N) . . . . . 3 Cr. Hrs.
The student will use the skills and knowledge acquired in IMD 101-113 to project drawings that are more complicated. The emphasis will be in developing speed and skills in techniques.
Theory 10 Hrs. - Lab 50 Hrs. 60 Ct. Hrs.

IMD 121 Introduction to Casting Drawing (N) . . . 3 Cr. Hrs.
In this unit, the student will apply drafting techniques to the drawing and detailing of casting.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 122 Introduction to Sheet Metal Drawing (N) . . . . . 3 Cr. Hrs.
In this unit, the student will apply drafting techniques to the drawing of sheet metal parts and the development of their patterns.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 123 Introduction to Electro-Mechanical Drawing (N) . . . . . 3 Cr. Hrs.
The student will apply drafting techniques to the drawing and detailing of electro-mechanical parts.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 200 Introduction to Inking (N) . . . . . 3 Cr. Hrs.
The student will learn the techniques of inking and the use of inking equipment.
Theory 20 hrs. — Lab 40 hrs. 60 Cr. Hrs.

IMD 205 Introduction to Technical Illustration (N) . . . . . 3 Cr. Hrs.
The student will learn the techniques common to technical illustration.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 206 Introduction to Gears and Cams (N) . . . . 3 Cr. Hrs.
In this unit, the student will learn how to draw gears and how they transmit power and motion. He will also learn to draw cams and learn how they impart predetermined motion to other machine parts.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 207 Introduction to Pipe Drawing (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the symbols and techniques common to pipe drawing.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 208 Introduction to Welding Drawing (N) . . . 3 Cr. Hrs.
The student will learn the symbology and techniques common to welding drawing.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 211-214 Industrial Drafting Technology I, II, III, and IV (N) . . . . . 3 Cr. Hrs.
In these units, the student will be assigned industrial drafting projects which he will research and complete with assembly and detail drawings. These drawings will be expected to meet industrial standards.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 215 Industrial Drafting Technology V (N) . . . 3 Cr. Hrs.
In this unit, the student may continue industrial drafting technology, or with the permission of the advisor, take cooperative work experience, electives, or independent study.
Theory 10 Hrs. - Lab 50 Hrs. 60 Ct. Hrs.

IMD 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

IMD 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Industrial Mechanical Drafting Technology Program, and is outside the program offering.
90 Hrs. Lab. 90 Ct. Hrs.

MACHINE DRAFTING TECHNOLOGY (N)
2-yr. Certificate and/or Associate Degree

This program provides the student with job entry skills as mechanical technicians in the machine field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
IMD 101	Mechanical Drafting Theory and Techniques I	3	60
IMD 102	Mechanical Drafting Theory and Techniques II	3	60
IMD 103	Mechanical Drafting Theory and Techniques III	3	60
IMD 111	Machine Detail and Assembly Drawing I	3	60
IMD 112	Machine Detail and Assembly Drawing II	3	60
IMD 113	Machine Detail and Assembly Drawing III	3	60
IMD 114	Machine Detail and Assembly Drawing IV	3	60
IMD 121	Introduction to Casting Drawing	3	60
IMD 122	Introduction to Sheet Metal Drawing	3	60
IMD 123	Introduction to Electro-Mechanical Drawing	3	60
MAS 100	Introduction to Machine Shop	3	60
MAS 101	Engine Lathe Setups and Operations	3	60
MAS 111	Vertical Mill Setups and Operations	3	60
MAS 115	Horizontal Mill Setups and Operations	3	60
MAS 201	Surface Grinder Setups and Operations	3	60
MDT 201	Machine Drafting Technology I	3	60
MDT 202	Machine Drafting Technology II	3	60
MDT 203	Machine Drafting Technology III	3	60
MDT 204	Machine Drafting Technology IV	3	60
MDT 205	Machine Drafting Technology V or one of the following: Electives, Independent Study, or Cooperative Work Experience	3	60
		60	1200

Required Related Courses

English Elective	3	60
Math Elective	5	80
Social Science Elective	3	45
	11	185
TOTAL REQUIRED HOURS	71	1385

Additional Major Courses

MDT 297	Cooperative Work Experience	3	105
MDT 299	Independent Study	3	90

IMD 101 Mechanical Drafting Theory and Techniques I (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn careers in drafting, tools and equipment, lettering, line work, reproduction equipment, measurement, instrument drawing, freehand sketching, geometric construction, and orthographic projection.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

IMD 102 Mechanical Drafting Theory and Techniques II (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn sectioning, pictorial drawing (three dimensional), auxiliary views, intersections and developments, and threads and fasteners.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

IMD 103 Mechanical Drafting Theory and Techniques III (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn dimensioning techniques, geometric curves and tangencies, and inking techniques.
Theory 30 Hrs. — Lab 30 Hrs. 60 Ct. Hrs.

IMD 111 Machine Detail and Assembly Drawing I (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to produce working drawings and assemblies according to standards. It is designed to teach as closely as possible the way projects are handled in industry. At the completion of this unit, the student will have the ability to develop more complex drawings with less information provided and learn to properly dimension mating parts.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 112 Machine Detail and assembly Drawing II (N) . . . . . 3 Cr. Hrs.
The student will learn working drawings, production detail and assembly drawings, precision dimensioning, tolerancing, and material selection.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 113 Machine Detail and Assembly Drawing III (N) . . . . . 3 Cr. Hrs.
The student will be assigned projects which will require the use of previously acquired skills, and he will learn geometric dimensioning and tolerancing principles.
Theory 15 Hrs. - Lab 45 Hrs. 60 Ct. Hrs.

IMD 114 Machine Detail and Assembly Drawing IV (N) . . . . . 3 Cr. Hrs.
The student will use the skills and knowledge acquired in MDT 101-113 to project drawings that are more complicated. The emphasis will be in developing speed and skills in techniques.
Theory 10 Hrs. - Lab 50 Hrs. 60 Ct. Hrs.

IMD 121 Introduction to Casting Drawing (N) . . . 3 Cr. Hrs.
In this unit, the student will apply drafting techniques to the drawing and detailing of casting.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 122 Introduction to Sheet Metal Drawing (N) . . . . . 3 Cr. Hrs.
In this unit, the student will apply drafting techniques to the drawing of sheet metal parts and the development of their patterns.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

IMD 123 Introduction to Electro-Mechanical Drawing (N). . . . . 3 Cr. Hrs.
The student will apply drafting techniques to the drawing and detailing of electro-mechanical parts.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

MAS 100 Introduction to Machine Shop (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn about the machine shop program, machine shop safety, bench tools, measuring instruments, power saws, lathe bit grinding, drill sharpening, engine lathe parts and functions, and engine lathe safety.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

MAS 101 Engine Lathe Setups and Operations (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn to mount chucks and face plates on the engine lathe, set up a lathe bit, mount a workpiece in a three-jaw chuck and between centers, face a part, turn diameters, center drill, drill, ream, bore, knurl, chamfer, neck, adjust speed and feed, use a taper attachment to hold tolerances specified on drawings from .015 to .001.
theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

MAS 111 Vertical Mill Setups and Operations (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn the vertical milling machine parts and their functions, how to indicate a vise, edge locating, slot and surface milling, dial adjustments, drilling, boring, tapping, speed and feed formulas, and squaring a workpiece.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

MAS 115 Horizontal Mill Setups and Operations (N). . . . . 3 Cr. Hrs.
In this unit. the student will learn horizontal milling machine parts and their functions, horizontal mill accessories, slap milling, slot milling, cutter selection form milling, and squaring a workpiece.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

MAS 201 Surface Grinder Setups and Operations (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn surface grinding theory, setups, and operations and apply this knowledge by grinding parts which have been prepared in milling units.
Theory 20 Hrs. — Lab 40 Hrs. 60 Ct. Hrs.

MDT 201-204 Machine Drafting Technology I, II, III, and IV (N) . . . . . 3 Cr. Hrs.
In these units, the student will be assigned machine drafting projects which he will research and complete with assembly and detail drawings. These drawings will be expected to meet industrial standards.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

MDT 205 Machine Drafting Technology V (N) . . . . 3 Cr. Hrs.
In this unit, the student may continue machine drafting technology, or with the permission of the advisor, take cooperative work experience, electives, or independent study.
Theory 10 Hrs. - Lab 50 Hrs. 60 Ct. Hrs.

MDT 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college co rse work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

MDT 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Machine Drafting Technology Program, and is outside the program offering.
90 Hrs. Lab. 90 Ct. Hrs.

PHOTOGRAPHY (A)
Certificate or Associate Degree

The purpose of this program of study is to provide a well rounded course of technical and aesthetic training to prepare graduates with the skills to enter the field of professional photography.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
PHO 100	Fundamentals of Photography	4	80
PHO 105	Advanced Photography	4	80
PHO 106	Fundamentals of Color Photography	4	80
PHO 107	History of Photography	4	80
PHO 200	Advanced Color Photography	4	80
PHO 205	Documentary Photography	4	80
PHO 206	Portrait Photography	4	80
PHO 207	Commercial Photography	4	80
PHO 208	Environmental Photography	4	80
PHO 209	The Art of Photography	4	80
ART 101	Basic Design I	3	90
ART 102	Basic Design II	3	90
ART 111	Basic Drawing I	3	90
COA 105	Typography and Layout	4	80
GRA 120	Process Camera and Halftones	6	120
MAN 105	Introduction to Business	3	45
	or		
MAR 109	Principles of Advertising	2	30
		61-62	1300-1315

Required Related Coruses

Any College English	3	45
General Studies Elective	3	45
	6	90

TOTAL REQUIRED HOURS 67-68 1390-1405

Additional Major Courses

PHO 219	Summer Photography Workshops	4-16
PHO 297	Cooperative Work Experience	4-12
PHO 299	Independent Study	4-12

PHOTOGRAPHY (A)

PHO 100 Fundamentals of Photography . . . . . 4 Cr. Hrs.
Introduction to basic black and white techniques — seeing with the camera, camera types, films and exposure, negative processing, enlargers, print finishing and mounting. Emphasis upon sound camera and darkroom techniques, producing good negatives and prints, developing a personal awareness of expression and communication through the medium of photography.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 105 Advanced Photography . . . . . 4 Cr. Hrs.
Prerequisite: PHO 100 — Fundamentals of Photography.
Introduction to professional quality techniques — the zone system, the view camera, photographic chemistry, proper use of the light meter, how to produce a professional quality black and white print. Emphasis upon practical testing and application of the technical controls which augment expression.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 106 Fundamentals of Color Photography . . . 4 Cr. Hrs.
Prerequisite: PHO 100 — Fundamentals of Photography.
Introduction to color theory, the nature of light and light sources, the reproduction of color, color films, processing. Emphasis upon building individual experience with color **transparency** films and potential expression through color photography.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 107 History of Photography. . . . . 4 Cr. Hrs.
A survey of the history of photography from its beginnings to the present. Special emphasis is placed on individual photographers who have made significant contributions to the field. The course will include discussion of the technical, commercial, stylistic and creative developments.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 200 Advanced Color Photography . . . . . 4 Cr. Hrs.
Prerequisite: PHO 106 — Fundamentals of Color Photography.
Introduction to color printing, the nature of photographic color paper, how to make your own standard negative, the use of modern color enlarger and color analyzer, print processing and finishing. Emphasis upon sound procedures and principles as well as experimental techniques that offer greatest freedom of expression through the color **print.**
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 205 Documentary Photography . . . . . 4 Cr. Hrs.
Prerequisites: PHO 105 — Advanced Photography; PHO 106 — Fundamentals of Color Photography.
A program of study in the application of photography as a documentary medium; areas covered will include the photo essay, photojournalism, and social commentary. Course will include practical assignments in photography for publication and display.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 206 Portrait Photography . . . . . 4 Cr. Hrs.
Prerequisites: PHO 105 — Advanced Photography; PHO 106 — Fundamentals of Color Photography.
Introduction to professional techniques in portraiture; the use of studio and natural light, creative and technical controls, as well as stylistic conventions and creative possibilities. Emphasis will include business practices, and how to produce a professional quality portrait.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 207 Commercial Photography 4 Cr. Hrs.
Prerequisites: PHO 105 — Advanced Photography; PHO 106 — Fundamentals of Color Photography.
An overview of current applications of professional photography in the areas of advertising illustration, editorial, architectural, fashion, and industrial photography. Special emphasis will be given to sound business practices as well as professional quality through a mastery of the equipment and materials.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 208 Environmental Photography . . . . . 4 Cr. Hrs.
Prerequisites: PHO 105 — Advanced Photography; PHO 106 — Fundamentals of Color Photography.
A program of study in the necessary photographic techniques for working with landscapes, natural forms, the qualities of **natural** light, as well as the purpose and application of environmental photographs. The class includes field trips, demonstrations and individual print critiques on the assignments.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 209 The Art Of Photography . . . . . 4 Cr. Hrs.
Prerequisites: PHO 105 — Advanced Photography; PHO 106 — Fundamentals of Color Photography.
A course designed to develop the individual's awareness in the creative aspects of photography; composition, photographic seeing, elements of design, visualization, and photographic communication. Emphasis will be given to studying different styles, methods of working and individual contributions of various photographers. The purpose of the course is to lead the student to see the potential of photography as the outer expression of inner growth.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

PHO 219 Summer Photography . . . . . 4-16 Cr. Hrs.
Provide opportunity for concentrated study of a variety of subjects to be announced. This will include as schedules permit, working with practicing photographers, guest lecturers, demonstrations, field trips and practical assignments. Advanced and/or remedial courses from the **required photography** curriculum will be offered.
Hrs. Theory - Hrs. Lab Ct. Hrs.

ART 101 Basic Design I . . . . . 3 Cr. Hrs.
Fundamentals of form, color, visual perception, principles of composition, organization and structure introduced with experimentation in two dimensional design.

ART 102 Basic Design II . . . . . 3 Cr. Hrs.
Continuation of ART 101 — Basic Design I, with advanced problems in form, color, visual perception, principles of composition, organization and structure in both two and three dimensional design.

ART 111 Basic Drawing I. . . . . 3 Cr. Hrs.
Freehand drawing covering a selection of subject, proportion, perspective, line, texture, value and composition. Media includes pencil, conte crayon, charcoal and ink.

COA 105 Typography and Layout . . . . . 4 Cr. Hrs.
Exercises in creating letterforms, indicating photography and illustration and basic copy fitting methods. Stress given to creative solutions of graphic problems.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

GRA 120 Process Camera and Halftones (Non-Graphic Art Majors) . . . . . 6 Cr. Hrs.
In this unit, the student will learn theory, use, parts plus types of process camera; films, papers, chemicals, proportions, tint screens filters, gray scales. Theory of halftones, calibrate screens, compute flash chart, shoot halftones.
48 Hrs. Theory - 72 Hrs. Lab 120 Ct. Hrs.

MAN 105 Introduction to Business . . . . . 3 Cr. Hrs.
A survey course enabling the student to gain an understanding of the overall business system and of the individual business institution. Surveys the functions and interrelationships within the individual business enterprise, and between it and its commercial and economic environment. Emphasizes the primary functional areas common to all types of business enterprise.
45 Hrs. Theory 45 Ct. Hrs.

MAR 109 Principles of Advertising . . . . . 2 Cr. Hrs.
An introductory course handling the theory, practice, and techniques in advertising. Considers the role of advertising and sales promotion in our economy, and includes a general survey of the kinds and purposes of different media, the psychological implications of typical appeals, and limited student practice in promotional programming.
30 Hrs. Theory 30 Ct. Hrs.

TECHNICAL ILLUSTRATION (A)
Associate Degree

This program provides the student with job entry skills for the Technical Illustration field and upgrading for those in the field who need to acquire more skill.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DRI 105	Introduction to Drafting and Sketching	6	120
DRI 106	Sections and Conventions	3	60
DRI 107	Basic Dimensioning Practices	3	60
DRI 108	Basic Descriptive Geometry and Auxilliary View Projection	3	60
DRI 109	Perspectives, Presentation and Ink Drawing Procedures	3	60
DRI 110	Intersections and Developments	3	60
DRI 115	Mechanical Detail Problems	3	60
DRI 116	Introduction to Assembly and Detail Problems	3	60
DRI 117	Mechanical Assembly and Detail Problems	3	60
TEI 200	Rendering	3	60
TEI 201	Airbrush I	3	60
TEI 202	Airbrush II	3	60
TEI 211	Special Problems I	3	60
TEI 212	Special Problems II	3	60
ART 101	Basic Design I	3	90
ART 111	Basic Drawing I	3	90
ART 112	Basic Drawing II	3	90
COA 200	Advertising Design and Rendering	4	80
GRA 120	Process Camera and Halftones	6	120
		64	1370

Required Related Courses

ENG	English or Comm. Elective	3	45
MAT	Mathematics	2	30
MAT	Mathematics	2	30
MAT	Metric Measure	1	15
HUM, LIT, PSY	Humanities, Literature or Psychology Elective	3-6	45-90
		11-14	165-210
	TOTAL REQUIRED HOURS	75-78	1535-1580

Additional Major Courses

ART 102	Basic Design II	3	90
PHO 100	Fundamentals of Photography	4	80
COA 205	Creative Graphic Design	4	80

TECHNICAL ILLUSTRATION (A)

DRI 105 Introduction to Drafting and Sketching. . . . . 6 Cr. Hrs.
Introduction, lettering, linework, geometric construction, reproduction, orthographic projection and isometric sketching. Orthographic and isometric drafting practices.
30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

DRI 106 Sections and Conventions . . . . . 3 Cr. Hrs.
Half, full, aligned, resolved, offset, and isometric sections.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 107 Basic Dimensioning Practices . . . . . 3 Cr. Hrs.
Basic cumulative, coordinate, fractional, decimal, and metric dimensions. Fastener details and nomenclature as applied to cast and machined parts.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 108 Basic Descriptive Geometry and Auxiliary View Projection . . . . . 3 Cr. Hrs.
Line Problems: True length, point view, bearing, slope and azimuth.
Plane Problems: Edge view, dihedral angle, true size and shape of any plane.
True angle between two lines, true length of a line by the principle line method.
Shortest Distance Between: Parallel and non-parallel lines, lines and planes.
Intersecting: Lines, line and planes, and planes.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 109 Perspective, Presentation, and Ink Drawing Procedures. . . . . 3 Cr. Hrs.
One and two point perspectives, presentation, charts, diagrams and drawings, ink and Leroy lettering practices.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 110 Intersections and Developments . . . . . 3 Cr. Hrs.
Flat and curved surface intersections and developments applicable to sheet metal and heavy plate components. (Flat, prism, cylindrical, and conical elements)
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 115 Mechanical Detail Problems. . . . . 3 Cr. Hrs.
Cast, welded and machine mechanical parts, detailed and dimensioned using cumulative/fraction, coordinate/decimal and metric dimensioning systems, shop practices and basic tolerances, introduction to machinery handbook.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 116 Introduction to Assembly and Detail Problems. . . . . 3 Cr. Hrs.
Cast, welded and machined mechanical assemblies and their necessary details and material lists.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DRI 117 Mechanical Assembly and Detail Projects. . . . . 3 Cr. Hrs.
Operating mechanical devices and their resulting details and material lists. Introduction to precision dimensioning techniques.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

TEI 200 Rendering. . . . . 3 Cr. Hrs.
This course provides fundamental training necessary to produce line and continuous tone drawings through use of graphic pencil, as well as various types of pens and ink.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

TEI 201 Airbrush I . . . . . 3 Cr. Hrs.
This course provides training in preparing art for technical manuals and diversified art. Airbrush techniques are used in shading techniques and photo retouching.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

TEI 202 Airbrush II. . . . . 3 Cr. Hrs.
A continuation of Airbrush I, with advanced shading and rendering techniques.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

TEI 211 Special Problems I . . . . . 3 Cr. Hrs.
The student prepares a presentation folio preparatory to employment. This includes work in black and white, as well as color showing assemblies, cutaways, exploded views, spot drawings, visual aids, lettering aids and art aids.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

TEI 212 Special Problems II. . . . . 3 Cr. Hrs.
A continuation of TEI 207 — Special Problems I, with advanced techniques.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

DRI 299 Independent Study . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Drafting Program, and outside the program offerings. By prearrangement and permission of the instructor only.
90 Hrs. Lab. 90 Ct. Hrs.

ART 101 Basic Design I . . . . . 3 Cr. Hrs.
Fundamentals of form, color, visual perception, principles of composition, organization and structure introduced with experimentation in two dimensional design.

ART 111 Basic Drawing I. . . . . 3 Cr. Hrs.
Freehand drawing covering a selection of subjects, proportion, perspective, line, texture, value and composition. Media includes pencil, conte crayon, charcoal, and ink.

ART 112 Basic Drawing II . . . . . 3 Cr. Hrs.
Introduction of color into drawing. Drawing in varied and mixed media, emphasizing experimentation. Broad range of size and material stressing composition and concept. Introduction to drawing the human figure.

COA 200 Advertising Design and Rendering . . . . 4 Cr. Hrs.
Designed to produce rendering in both line and continuous tone. Opaque water colors, India ink, scratch board, Ross board, cut papers, and films are applied to a variety of graphic design problems.
32 Hrs. Theory - 48 Hrs. Lab 80 Ct. Hrs.

GRA 120 Process Camera and Halftones (Non-Graphic Art Majors) . . . . . 6 Cr. Hrs.
In this unit, the student will learn theory, use, parts plus types of process camera; films, papers, chemicals, proportions, tint screens filters, gray sclaes. Theory of halftones, calibrate screens, compute flash chart, shoot halftones.
48 Hrs. Theory - 72 Hrs. Lab 120 Ct. Hrs.

Additional Major Courses

ART 102 Basic Design . . . . . 3 Cr. Hrs.
Continuation of ART 101 — Basic Design I, with advanced problems if form, color, visual perception, principles of composition, organization and structure in both two and three dimensional design.

COA 205 Creative Graphic Design . . . . . 4 Cr. Hrs.
Designed to give student further experience in designing trademarks, packaging, symbols and signing as well as producing individual pieces that complete portfolios.

PHO 100 Fundamentals of Photography . . . . . 4 Cr. Hrs.
Introduction to basic black and white techniques — seeing with the camera, camera types, films and exposure, negative processing, enlargers, print finishing and mounting. Emphasis upon sound camera and darkroom techniques, producing good negatives and prints, developing a personal awareness of expression and communication through the medium of photography.

ELECTRICITY/ELECTRONICS

APPLIANCE AND REFRIGERATION TECHNOLOGY (A)
Certificate or Associate Degree

This program will prepare the student with job entry skills in the field of major appliance repair and domestic heating and air conditioning.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
APT 100	DC Fundamentals and Magnetism	3	60
APT 105	AC Fundamentals and Circuits	3	60
APT 106	Electro-magnetic Principles	3	60
APT 107	Basic Appliance Repair	3	60
APT 108	Appliance Repair	3	60
APT 109	Home Laundry Equipment	3	60
APT 110	Kitchen Equipment Repair	3	60
APT 115	Principles of Refrigeration	3	60
APT 116	Refrigeration Circuits and Controls	3	60
APT 117	Residential Heating and Air Conditioning	3	60
APT 200	Motors, Controls, and Circuits	3	60
APT 205	Refrigeration Systems Components and Applications	3	60
APT 206	Refrigeration Heat Loads, System Development	3	60
APT 207	Refrigeration Installation and Service	3	60
APT 208	Special Refrigeration Systems	3	60
APT 209	Fundamentals of Air Conditioning	3	60
APT 210	Air Conditioning System Components and Applications	3	60
APT 215	Air Conditioning Heat Loads and System Development	3	60
APT 216	Air Conditioning Installation and Service	3	60
APT 217	Mobile Air Conditioning or one of the following: independent study, cooperative work experience, or an approved elective		
		60	1200

Required Related Courses

MAT 106	Basic Mathematics	3	45
COM 107	Occupational Communications	2	30
PSY 100	Human Relations in Business and Industry	2	30
DRI 135	Blueprint Reading	3	60
		10	165
	TOTAL REQUIRED HOURS	70	1365

APPLIANCE AND REFRIGERATION TECHNOLOGY (A)

APT 100 DC Fundamentals and Magnetism . . . . . 3 cr. hrs.
Fundamentals of direct current, magnetism and basic DC circuits.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 105 AC Fundamentals and Circuits. . . . . 3 Cr. Hrs.
Fundamentals of alternating current, basic AC circuits and wiring diagrams.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 106 Electro-magnetic Principles . . . . . 3 Cr. Hrs.
Magnetism as used in controls, starters, contactors and motors.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 107 Basic Appliance Repair. . . . . 3 Cr. Hrs.
Discussion and demonstrations of common mechanical problems.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 108 Appliance Repair . . . . . 3 Cr. Hrs.
Mechanical repairs on major home appliances.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 109 Home Laundry Equipment . . . . . 3 Cr. Hrs.
Introduction to home laundry equipment and water conditioning.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 110 Kitchen Equipment Repair. . . . . 3 Cr. Hrs.
Repair of gas and electric ranges, dishwashers and garbage disposers.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 115 Principles of Refrigeration . . . . . 3 Cr. Hrs.
Refrigeration conditioning, cycles and application.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 116 Refrigeration Circuits and Controls . . . . . 3 Cr. Hrs.
Controls, circuits, switches and diagrams as applied to refrigeration.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 117 Residential Heating and Air Conditioning . . . . . 3 Cr. Hrs.
Design, installation, and service of residential heating, air conditioning, filtering, and humidifying.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 200 Motors, Controls, and Circuits. . . . . 3 Cr. Hrs.
The study of AC motors, single and three phase, magnetic starters, and relays.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 205 Refrigeration System Components and Applications . . . . . 3 Cr. Hrs.
Calculating evaporator and condensing unit capacities, match components.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 206 Refrigeration Heat Loads, System Development . . . . . 3 Cr. Hrs.
Calculate room heat gains, size system components and refrigerant lines.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 207 Refrigeration Installation and Service. . . . . 3 Cr. Hrs.
Installation of components, piping, and service procedures.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 208 Special Refrigeration Systems . . . . . 3 Cr. Hrs.
The study of absorption systems, transport, and industrial applications.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 209 Fundamentals of Air Conditioning . . . . . 3 Cr. Hrs.
Principles and definitions; atmosphere, humidity, measurement and control, psychrometric charts and tables.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 210 Air Conditioning System Components and Applications . . . . . 3 Cr. Hrs.
Heating and humidifying, cooling and dehumidifying, and evaporative coolers, and hydronics.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 215 Air Conditioning Heat Loads and System Development . . . . . 3 Cr. Hrs.
Calculate building heat gains and losses, humidity requirements and size components, duct sizing.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 216 Air Conditioning Installation and Service . . . . . 3 Cr. Hrs.
Installation of components, piping split systems and service procedures.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

APT 217 Mobile Air Conditioning . . . . . 3 Cr. Hrs.
Basic mobile air conditioning systems and transport refrigeration.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

BIOMEDICAL EQUIPMENT TECHNOLOGY (A)
Associate Degree

This program provides the student with job entry skills for the Biomedical Equipment field and upgrading for those in the field who need to acquire more skill.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELT 100	DC Fundamentals	3	60
ELT 105	DC Circuits and Magnetism	3	60
ELT 106	AC Fundamentals	3	60
ELT 107	AC Circuits	3	60
ELT 108	Vacuum Tube Fundamentals and Circuits	3	60
ELT 109	Solid State Fundamentals	3	60
ELT 110	Transistor Amplifiers	3	60
ELT 115	Transistor Oscillators and FETS	3	60
ELT 116	SCR, UJT, and Special Devices	3	60
ELT 117	IC Operational Amplifiers	3	60
BET 200	Introduction to Biomedical Technology	3	60
BET 205	Inhalation Equipment	3	60
BET 206	Temperature Control System	3	60
BET 207	High Frequency Instrumentation	3	60
BET 208	Clinical Laboratory Instrumentation	3	60
BET 209	Biophysical Measurements	3	60
BET 210	Troubleshooting ECG Equipment	3	60
BET 215	Peripheral Monitoring Equipment	3	60
BET 216	Digital Monitoring Instrumentation	3	60
BET 217	Introduction to Radiology	3	60
		60	1200

Required RElated Courses		
English Elective	3	45
Mathematics Elective	3	45
Phsyics Elective	3	75
Basic Science	4	60
	13	225
TOTAL REQUIRED HOURS	73	1425

BIOMEDICAL EQUIPMENT TECHNOLOGY (A)

ELT 100 DC Fundamentals (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn about safety procedures, the relationship of current, voltage, resistance and power and the use of various meters to measure current, voltage, and resistance in series and parallel circuits.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 105 DC Circuits and Magnetism (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn to analyze series-parallel circuits, RC circuits, RL circuits, and the characteristics of magnetism, inductance and capacitance.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 106 AC Fundamental (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn the AC relationships of resistance inductive and capacitive reactance, phase, voltage, impedance, current, power, and turns ratio of the transformer.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 107 AC Circuits (A, N) . . . . . 3 cr. hrs.
In this unit the student will analyze frequency discriminating circuits involving series and parallel RL, RC, LC, and RCL circuits with applications as high pass, low pass, band pass, and band reject filters.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 108 Vacuum Tube Fundamentals and Circuits (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn to identify and explain biasing, coupling, decoupling, classes of operation, aduio amplifiers, phase splitter, phase inverter, push-pull amplifiers, and oscillator circuits.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 109 Solid State Fundamentals (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn to measure the AC and DC voltages of a half-wave, full-wave, bridge, and voltage doubler power supply circuits and how to test and bias the transistor for correct linear operation.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 110 Transistor Amplifiers (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn the characteristics associated with the common emitter, common bias, common collector, and the operation of single-ended, feedback, complimentary, differential, phase splitter, phase inverters, and push-pull amplifiers.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 115 Transistor Oscillators and FETS (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn the principle of regenerative feedback used to make oscillators work, plus the characteristics of the JFET configurations and MOSFETS.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 116 SCR, UJT, and Special Devices (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn the symbols, characteristics, and circuit operation of the SCR, UJT, triax, diac, varactor, thermistor, and thermocouple.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

ELT 117 IC Operational Amplifiers (A, N) . . . . . 3 cr. hrs.
In this unit, the student will learn the considerations necessary in circuits using IC op amps such as output offset voltage, frequency compensation, slow rate, comm-mode rejection and their uses as amplifiers, integrators, differentiators, oscillators, and active filters.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 200 Introduction to Biomedical . . . . . 3 cr. hrs.
An overview of study of medical terminology, optics, electromagnetic theory, safety, transducers, and measurement of physical variables.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 205 Inhalation Equipment . . . . . 3 cr. hrs.
A study of the respiratory system and fluid dynamics with emphasis on medical equipment associated with them.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 206 Temperature Control Systems . . . . . 3 cr. hrs.
A study of autoclaves, incubators, and other temperature related medical instruments. The emphasis will be on servicing of the equipment in lab.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 207 High Frequency Instrumentation . . . . . 3 cr. hrs.
A study of telemetry, diathermy, ultrasound and electrosurgery. Theory of operation and servicing techniques will be covered.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 208 Clinical Laboratory Instrumentation . . . . . 3 cr. hrs.
A study of blood, gas, chemical, and counting tests and measurements found in most hospital laboratories.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 209 Biophysical Measurements . . . . . 3 cr. hrs
A study of the physiology of the cell, the heart, the cardio vascular system, and the nervous system, with emphasis on instrumentation used to measure those structures.
24 hrs. theory - 36 hrs. lab . . . . . 60 ct. hrs.

BET 210 Troubleshooting ECG Equipment . . . . . 3 cr. hrs.
A study of the development and operation of ECG instrumentation with laboratory exercises on the Burdick EK5A.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 215 Peripheral Monitoring Equipment . . . . . 3 cr. hrs.
A study of EEG, EMG, blood pressure and defibulators with emphasis on servicing equipment.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 216 Digital Monitoring Instrumentation . . . . . 3 cr. hrs.
A study of analog and digital computer circuits with emphasis on digital readouts and non-fade techniques.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

BET 217 Introduction to Radiology . . . . . 3 cr. hrs.
An introduction to the techniques and circuits found in most hopsital x-ray and nuclear medicine departments.
24 hrs. theory - 36 hrs. lab 60 ct. hrs.

COMMUNICATIONS ELECTRONICS TECHNOLOGY (N)
Two Year Certificate and/or Associate Degree

This program provides techniques with a detailed analysis of the operation, installation, and maintenance of "two-way" FM, AM, and SSB radio systems used by Fire/Police departments, businesses, citizen band and amateur radio operators. Comprehensive preparation for all required FCC licenses will be offered.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

FIRST CLASS FCC LICENSE (3 WK Certificate)

		CR. HRS.	CT. HRS.
ELC 208	FCC 1st Class Radio Telephone License Preparation	4	60
	CHECK WITH ADVISOR FOR PREREQUISITES		

AMATEUR NOVICE LICENSE (3 WK Certificate)

ELC 209	FCC Amateur License Preparation (Novice)	3	60

AMATEUR GENERAL LICENSE (3 WK Certificate)

ELC 210	FCC Amateur License (General)	3	60
	CHECK WITH ADVISOR FOR PREREQUISITES		

CERTIFIED ELECTRONICS TECHNICIAN LICENSE (3 WK Certificate)

ELC 215	CET License Preparation	4	60
	CHECK WITH ADVISOR FOR PREREQUISITES		

SECOND CLASS FCC LICENSE (9 Wk Certificate)

ELC 200	FCC 2nd Class Radio Telephone License Preparation	8	120
	CHECK WITH ADVISOR FOR PREREQUISITES		

Two Year Certificate and/or Associate Degree

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELT 100	DC Fundamentals	3	60
ELT 105	DC Circuits and Magnetism	3	60
ELT 106	AC Fundamentals	3	60
ELT 107	AC Circuits	3	60
ELT 108	Vacuum Tube Fundamentals and Circuits	3	60
ELT 109	Solid State Fundamentals	3	60
ELT 110	Transistor Amplifiers	3	60
ELT 115	Transistor Oscillators and FET's	3	60
ELT 116	SCR, UJT, and Special Devices	3	60
ELT 117	IC Operational Amplifiers	3	60
ELT 200	Instruments and Measurements	6	120
ELT 206	Pulse and Digital Fundamentals	3	60
ELC 200	FCC 2nd Class Radio Telephone License Preparation	8	120
ELC 205	Receivers (AM, FM, SSC)	6	120
ELC 206	Transmitters (AM, FM, SSB)	6	120
ELC 207	Systems Design (Repeaters, Pagers, Etc.)	3	60
		62	1200

Required Related Courses

Math Elective	6	96
Science Elective	3	45
English Elective	3	45
	12	186
TOTAL REQUIRED HOURS	74	1386

Additional Major Courses

ELC 208	FCC 1st Class Radio Telephone License Preparation	4	60
ELC 209	FCC Amateur License Preparation (Novice)	3	60
ELC 210	FCC Amateur License (General)	3	60
ELC 215	CET License Preparation	3	60
ELC 297	Cooperative Work Experience	3	105
ELC 299	Independent Study	3	90

ELT 100 DC Fundamentals (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn about safety procedures, the relationship of current, voltage, resistance, and power and the use of various meters to measure current, voltage, and resistance in series and parallel circuits.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 105 DC Circuits and Magnetism (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to analyze series-parallel circuits, RC circuits, RL circuits, and the characteristics of magnetism, inductance, and capacitance.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs

ELT 106 AC Fundamentals (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the AC relationships of resistance, inductive and capacitive reactance, phase, voltage, impedance, current, power, and turns ratio of the transformer.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 107 AC Circuits (N) . . . . . 3 Cr. Hrs.
In this unit, the student will analyze frequency discriminating circuits involving series and parallel RL, RC, LC, and RCL circuits with applications as high pass, low pass, band pass, and band reject filters.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 108 Vacuum Tube Fundamentals and Circuits (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and explain biasing, coupling, decoupling, classes of operation, audio amplifiers, phase splitter, phase inverter, push-pull amplifiers, and oscillator circuits.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 109 Solid State Fundamentals (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to measure the AC and DC voltages of a half-wave, full-wave, bridge, and voltage doubler power supply circuit and how to test and bias the transistor for correct linear operation.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 110 Transistor Amplifiers (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the characteristics associated with the common emitter, common base, common collector, and the operation of single-ended, differential, phase splitter, phase inverters, and push-pull amplifiers.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 115 Transistor Oscillators and FET's (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the principle of regenerative feed-back used to make oscillators work, plus

the characteristics of the JFET configurations and MOSFETS.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 116 SCR;s, UJT's, and Special Devices (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the symbols, characteristics, and circuit operation of the SCR, UJT, TRIAC, DIAC, varactor and thermistor.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 117 IC Operational Amplifiers (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the considerations necessary in circuits using IC op amps such as output offset voltage, frequency compensation, slew rate, common mode rejection and their uses as amplifiers, integrators, differentiators, oscillators, and active filters.
24 Hrs. Theory—36 Hrs. Lab 60 Ct. Hrs.

ELT 200 Instruments and Measurements (N) . . . 6 Cr. Hrs.
In this unit, the student will learn the concepts of measurements, selection of instruments, limitations, applications, and use of meters, oscilloscopes, signal generators, transistor curve tracers, and counters.
48 Hrs. Theory — 72 Hrs. Lab 120 Ct. Hrs.

ELT 206 Pulse and Digital Fundamentals (N) . . . . 3 Cr. Hrs.
In this unit the student will learn the principles of pulse and switching circuits, binary counting and arithmetic Boolean algebra, truth tables, digital logic, and the basic logic gates with analysis and synthesis of circuits.
20 Hrs. Theory — 40 Hrs. Lab 60 Ct. Hrs.

ELC 200 FCC 2nd Class Radio Telephone License Preparation (N) . . . . 8 Cr. Hrs.
The student will discuss basic law and operating practices (FCC elements I and II), study basic radio telephone theory (FCC element III), and prepare for FCC 2nd Class Radio Telephone License examination.
120 Hrs. Theory 120 Ct. Hrs.

ELC 205 Receivers (AM, FM, SSC) (N) . . . . . 6 Cr. Hrs.
The student will study AM, FM, and SSB receivers circuitry and make block and schematic analysis of single, double, and triple conversion units. Carrier, tone, and digital squelch circuits will be analyzed. The student will demonstrate proficiency at alignment, troubleshooting, evaluation of general specifications such as receiver sensitivity, desensitization, selectivity, audio quality and output, and squelch sensitivities.
48 Hrs. Theory — 72 Hrs. Lab 120 Ct. Hrs.

ELC 206 Transmitters (AM, FM, SSB) (N) . . . . . 6 Cr. Hrs.
The student will study block and schematic diagram analysis of AM, FM, and SSB transmitters and will demonstrate proficiency at alignment, frequency, and modulation measurements and adjustments. Students will discuss mobile and base station power supplies. The student will demonstrate trouble-shooting proficiency, make general specification evaluations such as frequency and modulation measurements and adjustments, audio response, and sensitivity.
40 Hrs. Theory—20 Hrs. Lab. 120 Ct. Hrs.

ELC 207 Systems Design (Repeaters, Pagers, Etc.) (N) . . . . . 3 Cr. Hrs.
Students will discuss repeater station requirements, antennas, cavities, duplexers, transmission lines, dispatch consoles, test equipment, selective signaling methods. Students will demonstrate proficiency at equipment installation and removal, remote console adjustments, test equipment calibration, and preventative maintenance procedures.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELC 208 FCC 1st Class Radio Telephone License Preparation (N) . . . . 4 Cr. Hrs.
The student will study advanced radio telephone theory (FCC element III) and prepare for FCC 1st Class Radio Telephone License. (Prerequisite: FCC 2nd Class Radio Telephone License Prep. or equivalent)
60 Hrs. Theory 60 Ct. Hrs.

ELC 209 FCC Amateur License Preparation (Novice) (N) . . . . . 3 Cr. Hrs.
The student will discuss FCC rules, regulations, operating procedures, and basic theory, and will demonstrate the ability to send/receive radio telegraph code at 5 WPM and will prepare for "Novice" class license.
20 Hrs. Theory — 40 Hrs. Lab 60 Ct. Hrs.

ELC 210 FCC Amateur License (General) (N) . . . . . 3 Cr. Hrs.
The student will demonstrate FCC rules, regulations, operating procedures and practices, emission characteristics, electrical principles, antenna transmission lines., and will demonstrate the ability to send/receive radio telegraph code at 13 WPM and will prepare for "General" class FCC license.
20 Hrs. Theory — 40 Hrs. Lab 60 Ct. Hrs.

ELC 215 CET License Preparation (N) . . . . . 4 Cr. Hrs.
This course is a CET license preparation review covering TV signals and circuits, antennas, transmission lines, circuit, analysis and basic math. The student will prepare for CET license examination.
60 Hrs. Theory 60 Ct. Hrs.

ELC 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

ELC 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Communications Electronics Technology Program, and is outside the program offering. 90 Ct. Hrs.

CONSUMER ELECTRONICS TECHNOLOGY (N)
Two Year Certificate and/or Associate Degree

The student will develop knowledge and skill in diagnosing, trouble-shooting, and repairing selected consumer entertainment and home electronics products.

Consumer Electronics is structured on a 3 week, 60 contact hour module; however, a great deal of flexibility exists. A full load would be five of the three hour modules offered concurrently.

Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors. A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty advising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Consumer Electronics student may select the job entry skills he/she wants to develop. The student may certify as having entry level skills in Auto Electronics in 39 weeks, Antenna Installation Specialist in 6 weeks, a Reload Changer Specialist in 21 weeks, and/or a Security System Specialist in 30 weeks as well as the entire two year certificate.

The Consumer Electronics Program uses an individualized, self paced, multi-media instructional approach. Faculty lectures and/or small group demonstration is incorporated with hands-on practical laboratory experience.

New students need not wait for the next formal registration as they may be admitted to the Consumer

Electronics Program at any time providing an opening exists. A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

Auto Electronics Entertainment
(39 Week Certificate)

Course No.	Title	Cr. Hrs.	Ct. Hrs.
TCE 100	Analyze & Trouble-shoot DC Circuits	3	60
TCE 105	Analyze & Trouble-shoot AC Circuits	3	60
TCE 106	Analyze & Trouble-shoot Vacuum Tube Circuits	3	60
TCE 107	Operations of Transistor Circuits	3	60
TCE 108	Trouble-shoot Solid State Circuits	3	60
TCE 109	Trouble-shoot Other Solid State Devices, Power Supplies, Microphones, and Speakers	3	60
TCE 110	Trouble-shoot & Repair TV Radios	3	60
TCE 115	Trouble-shoot & Repair Solid State Radios	3	60
TCE 116	Trouble-shoot & Repair FM Radios	3	60
TCE 117	Trouble-shoot & Repair AM/FM Radios	3	60
TCE 215	Trouble-shoot & Repair MPX Stereo Receivers	3	60
TCE 216	Trouble-shoot & Repair CB Transceivers	3	60
TCE 217	Trouble-shoot & Repair Tape Recorders and Stereos or one of the following: electives, cooperative work experience, or independent study	3	60
		39	780

CHECK WITH ADVISOR FOR PREREQUISITES

Antenna Installation Specialist
(6 Week Certificate)

TCE 219	Design & Install MATV	3	60
TCE 220	Transmission Lines & Antennas	3	60
		6	120

CHECK WITH ADVISOR FOR PREREQUISITES

Record Changer Specialist
(21 Week Certificate)

TCE 100	Analyze & Trouble-shoot DC Circuits	3	60
TCE 105	Analyze & Trouble-shoot AC Circuits	3	60
TCE 106	Analyze & Trouble-shoot Vacuum Tube Circuits	3	60
TCE 107	Operations of Transistor Circuits	3	60
TCE 108	Trouble-shoot Solid State Circuits	3	60
TCE 109	Trouble-shoot Other Solid State Devices, Power Supplies, Microphones & Speakers	3	60
TCE 218	Trouble-shoot & Repair Automatic Record Changers	3	60
		21	420

SECURITY SYSTEM
(30 Week Certificate)

Course No.	Title	Cr. Hrs.	Ct. Hrs.
TCE 100	Analyze and Trouble-shoot DC Circuits	3	60
TCE 105	Analyze and Trouble-shoot AC Circuits	3	60
TCE 106	Analyze and Trouble-shoot Vacuum Tube Circuits	3	60
TCE 107	Operations of Transistor Circuits	3	60
TCE 108	Trouble-shoot Solid Sate Circuits	3	60
TCE 109	Trouble-shoot Other Solid State Devices, Power Supplies, Microphones, and Speakers	3	60
TCE 110	Trouble-shoot and Repair TV Radios	3	60
TCE 200	Symptom Diagnosis Monochrome TV	3	60
TCE 205	Trouble-shoot and Field Repair Monochrome TV and Principles of Color TV	3	60
TCE 225	Install, Test, and Repair Security System	3	60
		30	600

TV REMOTE CONTROL
(57 Week Certificate)

TCE 100	Analyze and Trouble-shoot DC Circuits	3	60
TCE 105	Analyze and Trouble-shoot AC Circuits	3	60
TCE 106	Analyze and Trouble-shoot Vacuum Tube Circuits	3	60
TCE 107	Operations of Transistor Circuits	3	60
TCE 108	Trouble-shoot Solid State Circuits	3	60
TCE 109	Trouble-shoot Other Solid State Devices, Power Supplies, Microphones, and Speakers	3	60
TCE 110	Trouble-shoot and Repair TV Radios	3	60
TCE 115	Trouble-shoot and Repair Solid State Radios	3	60
TCE 116	Trouble-shoot and Repair FM Radios	3	60
TCE 117	Trouble-shoot and Repair AM/FM radios	3	60
TCE 200	Symptom Diagnose Monochrome TV	3	60
TCE 205	Trouble-shoot and Field Repair Monochrome TV and Principles of Color TV	3	60
TCE 207	Peak and Sweep Alignment	3	60
TCE 208	Trouble-shoot and Repair Picture Tube Circuits, Video, and AGC	3	60
TCE 209	Trouble-shoot and Repair Chroma Circuits	3	60
TCE 210	Trouble-shoot and Repair VIF, Tuner, and Sound	3	60
TCE 227	Trouble-shoot and Repair TV Remote Control	3	60
TCE 228	Analyze Digital Logic Circuits	6	120
		57	3420

MICROWAVE OVEN
(24 Week Certificate)

Course No	Title	Cr. Hrs.	Ct. Hrs.
TCE 100	Analyze and Trouble-shoot DC Circuits	3	60
TCE 105	Analyze and Trouble-shoot AC Circuits	3	60
TCE 106	Analyze and Trouble-shoot Vacuum Tube Circuits	3	60
TCE 107	Operations of Transistor Circuits	3	60
TCE 108	Trouble-shoot Solid State Circuits	3	60
TCE 109	Trouble-shoot Other Solid State Devices, Power Supplies, Microphone, and Devices	3	60
TCE 110	Trouble-shoot and Repair TV Radios	3	60
TCE 226	Trouble-shoot and Repair Microwave Oven	3	60
		24	480

Two Year Certificate and/or Associate Degree

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
TCE 100	Analyze and Trouble-shoot DC Circuits	3	60
TCE 105	Analyze and Trouble-shoot AC Circuits	3	60
TCE 106	Analyze and Trouble-shoot Vacuum Tube Circuits	3	60
TCE 107	Operations of Transistor Circuits	3	60
TCE 108	Trouble-shoot Solid State Circuits	3	60
TCE 109	Trouble-shoot Other Solid State Devices, Power Supplies, Microphones, and Speakers	3	60
TCE 110	Trouble-shoot and Repair VT Radios	3	60
TCE 115	Trouble-shoot and Repair Solid State Radios	3	60
TCE 116	Trouble-shoot and Repair FM Radios	3	60
TCE 117	Trouble-shoot and Repair AM/FM Radios	3	60
TCE 200	Symptom Diagnose Monochrome TV	3	60
TCE 205	Trouble Shoot and Field Repair Monochrome TC and Principles of Color TV	3	60
TCE 206	Trouble-shoot and Repair Color TV	3	60
TCE 207	Peak and Sweep Alignment	3	60
TCE 208	Trouble-shoot and Repair Picture Tube Circuits, Video, and AGC	3	60
TCE 209	Trouble-shoot and Repair Chroma Circuits	3	60
TCE 210	Trouble-shoot and Repair VIF, Tuner, and Sound	3	60
TCE 215	Trouble-shoot and Repair MPX Stereo Receivers	3	60
TCE 216	Trouble-shoot and Repair CB Transceivers	3	60
TCE 217	Trouble-shoot and Repair Tape Recorders and Stereos or one of the following: electives, cooperative work experience, or independent study	3	60
		60	1200

Required Related Courses

	English Elective	3	45
	Math Elective	5	80
	Social Science Elective	3	45
		11	170
	TOTAL REQUIRED HOURS	71	1370

Additional Major Courses

TCE 218	Trouble-shoot and Repair Automatic Record Changers	3	60
TCE 219	Design and Install MATV	3	60
TCE 220	Transmission Lines and Antennas	3	60
TCE 225	Install, Test, and Repair Security System	3	60
TCE 226	Trouble-shoot and Repair Microwave Oven	3	60
TCE 227	Trouble-shoot and Repair TV Remote Control	3	60
TCE 228	Analyze Digital Logic Circuits	6	120
TCE 297	Cooperative Work Experience	3	105
TCE 299	Independent Study	3	90

TCE 100 Analyze and Trouble-shoot DC Circuits(N). . . . . 3 Cr. Hrs.

The student will demonstrate a competency in safety, trouble-shooting, math, electronic terms, quantities and symbols, operation of meters, soldering techniques, Ohm's and Kirchoff's Laws, trouble-shoot series, parallel and series-parallel circuits, polarity, meter sensitivity and loading, registor limits, resistor application, and other basic components such as conductors, insulators, fuses, batteries, relays, thermistors, and voltage dependent resistors.

20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 105 Analyze and Trouble-shoot AC Circuits(N). . . . . 3 Cr. Hrs.

The student will demonstrate an understanding of the basic operation, use, and care of an AC voltmeter, oscilloscope, and AM/FM generator, sine wave, frequency, cycle, period, alternation, phase angle, reactances, resonance, Ohm's Law for series and parallel AC circuits, complex AC waveforms, time constant, harmonics, capacitors, inductors and transformers, and AC measurement. The student will practice testing capacitors, coils, and transformers for short, leakage, and open by application of trouble-shooting techniques such as coil ringing test, signal injection, ohmmeter and voltmeter tests, and specialized test equipment.

20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 106 Analyze and Trouble-shoot Vacuum Tube Circuits (N). . . . . 3 Cr. Hrs.

The student will demonstrate knowledge of solid state principles such as forward and reverse resistance bias, solid state symbols, bias principles, temperature compensation, standard bias, static and dynamic operation, oscillators, and amplifier operation.

20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 107 Operations of Transistor Circuits(N). . . . . 3 Cr. Hrs.

The student will demonstrate knowledge of solid state principles such as forward and reverse resistance bias, solid state symbols, bias principles, temperature compensation, standard bias, static and dynamic operation, oscillators, and amplifer operation.

20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 108 Trouble-shoot Solid State Circuits (N) ..... 3 Cr. Hrs.
The student will trouble-shoot transistor amplifiers and study the behavior of such circuits when certain components fail. The trouble-shooting exercise also includes voltage and resistance analysis of functional radios.
20 Hrs. Theory-40 Hrs. Lab. 60 Ct. Hrs.

TCE 109 Trouble-shoot Solid State Devices, Power Supplies, Microphones, and Speakers (N) ..... 3 Cr. Hrs.
The student will express knowledge and skill of solid state devices such as SCR, FET, UJT, DIAC, TRIAC by construction and studying its operational behaviors. In addition, the student will analyze power supplies such as half-wave, full-wave, bridge, doublers, triplers, and quadruplers. The student will be able to perform voltage and ripple analysis and pin-point the fault to the power supply circuitry or to the load. Finally, the student will demonstrate an understanding of how a microphone and speaker work and how to test and check these devices.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 110 Trouble-shoot and Repair VT Radios (N) ..... 3 Cr. Hrs.
The student will identify the AM principles and the operation and circuitry of an AM superheterodyne receiver. He/she will apply this knowledge in diagnosing and repairing radios and develop his/her trouble-shooting skills by applying such techniques as analysis of the problem, signal injection, signal tracing, process of isolation, voltage and resistance analysis, component substitution, and alignment. The student will perform routine checks and tests of the repaired radio and certify the product is safe for consumer use.
20 Hrs. Theory-40 Hrs. Lab. 60 Ct. Hrs.

TCE 115 Trouble-shoot and Repair Solid State AM Radios (N) ..... 3 Cr. Hrs.
The student will demonstrate his/her knowledge and technical skill by diagnosing, trouble-shooting, and repairing solid state AM radios including auto radios.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 116 Trouble-shoot and Repair FM Radios (N) ..... 3 Cr. Hrs.
The student will demonstrate his/her knowledge of the FM principles and the basic operation and circuitry of a FM radio receiver. He/she will apply this knowledge in diagnosing, trouble-shooting, and repairing FM radios.
20 Hr. Theory-40 Hr. Lab 60 Ct. Hrs.

TCE 117 Trouble-shoot and Repair AM/FM Radios (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair AM/FM radios and home audio amplifiers.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 200 Symptom Diagnose Monochrome TV (N) ..... 3 Cr. Hrs.
The student will demonstrate an understanding of the chassis layout, composite video signal, adjustment and the operation of a monochrome TV receiver. He/she will demonstrate a competency by diagnosing many different and actual receiver troubles and isolate the deficiences to a particular function(s) of the receiver.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 205 Trouble-shoot and Field Repair Monochrome TV and Principles of Color TV (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair monochrome TV receivers. In addition, the student will study the chassis layout, composite color video signal, adjustments, and the operation of a color receiver.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 206 Trouble-shoot and Repair Color TV (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and field repair color receivers. In addition, he/she will apply field and bench techniques to diagnose, trouble-shoot, and repair malfunctions in power supplies, sync, and raster producing circuits.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 207 Peak and Sweep Alignment (N) ..... 3 Cr. Hrs.
By aligning many receivers, the student will gain proficiency in the peak and sweep alignment of the video IF, tuner, chroma, AFT, and the sound sections.
20 Hrs. Theory-40 Hrs. Lab. 60 Ct. Hrs.

TCE 208 Trouble-shoot and Repair Picture Tube Circuits, Video, and AGC (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair malfunctions in picture tube, video, and AGC circuits.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 209 Trouble-shoot and Repair Chroma Circuits (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair malfunctions in chroma, IF, AFPC, and automatic color circuits.
20 Hrs. Theory-40 Hrs. Lab. 60 Ct. Hrs.

TCE 210 Trouble-shoot and Repair VIF, Tuner, and Sound (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair malfunctions in VIF, tuner, and sound circuits. In addition, the student is given exposure on newer receiver systems of different makes.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 215 Trouble-shoot and Repair MPX Stereo Receivers (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair MPX receivers.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 216 Troqble-shoot and Repair CB Transceivers (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair CB transceivers radios.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 217 Trouble-shoot and Repair Tape Recorders and Stereos (N) ..... 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair tape recorders and stereo sound systems.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 218 Trouble-shoot and Repair Automatic Record Changers (N) ..... 3 Cr. Hrs.
The student will examine the operation of the record changers. In addition, he/she will diagnose, trouble-shoot, adjust, lubricate, align, and repair record changers.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 219 Design and Install MATV (N) ..... 3 Cr. Hrs.
The student will design, select, and install a MATV distribution system. The design includes the antenna, amplifier, splitter, tap off, and the coaxial cable.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 220 Transmission Lines and Antennas (N) . . 3 Cr. Hrs.
The student will show evidence of understanding the basic principles of transmission lines and antennas, and also will install a home antenna system.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 225 Install, Test and Repair Security System (N) . . . . . 3 Cr. Hrs.
The student will demonstrate a working knowledge of the various electronics security systems and will be able to install, test, adjust, diagnose, trouble-shoot and repair such systems.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 226 Trouble-shoot and Repair Microwave Oven (N) . . . . . 3 Cr. Hrs.
The student must demonstrate a working knowledge of a microwave oven and be able to diagnose, trouble-shoot, and repair this product.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 227 Trouble-shoot and Repair TV Remote Control (N) . . . . . 3 Cr. Hrs.
The student will diagnose, trouble-shoot, and repair TV remote control systems and circuit.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 228 Analyze Digital Logic Circuits (N) . . . . . 3 Cr. Hrs.
The student will recognize the basic operations of logic circuits found in consumer products.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

TCE 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory-90 Hrs. Lab 105 Ct. Hrs.

TCE 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Consumer Electronics Technology Program and is outside the program offering.
90 Ct. Hrs.

ELECTRICITY INDUSTRIAL/COMMERCIAL (R)
Certificate or Associate Degree

Designed to give skills for job entry employment as an electrical apprentice; wiring residences, commercial and industrial installations under the supervision of a licensed journeyman electrician, using latest techniques of installation according to the National Electric Code.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELF 100	Fundamentals of AC/DC Electricity	9	180
ELF 105	Solid State Devices & Circuits	6	120
EIC 105	Electrical Blueprint Reading	3	45
EIC 115	Electrical Planning	3	45
EIC 121	Electrical Installation I	3	60
EIC 122	Electrical Installation II	3	60
EIC 131	National Electric Code I	3	45
EIC 132	National Electric Code II	3	45
EIC 200	Electrical Calculations	3	45
EIC 201	Transformer Installation & Theory	3	60
EIC 202	AC & DC Machines, Installation & Theory	3	60
EIC 203	Poly Phase Rotating Machines & Transformers	3	60
ELC 205	Basic Electrical House Wiring	3	45
EIC 207	Electrical Control Wiring for Plumbing, Heating, A.C. Trades	3	45
EIC 211	Installation & Operation Of Distribution Systems I	3	60
EIC 212	Installation & Operation Of Distribution Systems II	3	60
EIC 215	Advanced Electrical Installation	3	45
EIC 216	Advanced Electrical Planning	3	45
		63	1155

Required Related Courses

	Math Elective	3	45
	English Elective	3	45
	Social Science Elective	3	45
	Electives	3	45
		12	180
	TOTAL REQUIRED HOURS	75	1335

Additional Major Courses

EIC 111	Solid State Devices For Electricians I	3	60
EIC 112	Solid State Devices For Electricians II	3	60
EIC 120	Electricity For Construction Trades	3	60
EIC 208	Advanced National Electric Code	3	45
EIC 209	Advanced Code Calculations	3	45
EIC 210	Advanced Electrical Theory	3	45
EIC 217	Electrical Estimating & Costing	3	45
EIC 218	Electrical Instruments & Measurements	3	60
EIC 219	Electrical Machine & Control Circuits	3	60
EIC 297	Cooperative Work Experience	2-9	60-375
EIC 299	Independent Study	3	90
BTR 125	Blueprint Reading For Construction Trades	4	68
BTR 126	Blueprint Reading For Mechanical Trades	4	68
BTR 127	Building Inspection For Construction Trades	4	68
BTR 128	Estimating Residential Construction Costs	4	68
BTR 129	Construction Materials I	4	68
BTR 130	Construction Materials II	4	68
BTR 140	Overview Of Bricklaying, Carpentry, Electrical, & Plumbing Fields	4	68

ELECTRICITY INDUSTRIAL/COMMERCIAL (R)

ELF 100 Fundamentals of AC/DC Electricity . . . . . 9 Cr. Hrs.
Current, voltage, resistance and power in AC and DC circuits. Series, parallel and series-parallel circuit computations and measurements, troubleshooting procedures, properties of conductors and insulators. Soldering, basic test equipment and circuit analysis.
45 Hrs. Theory - 135 Hrs. Lab. 180 Ct. Hrs.

ELF 105 Solid State Devices & Circuits . . . . . 6 Cr. Hrs.
Prerequisite: ELF 100 or consent of instructor.
Analysis and interpretation of various circuits using solid state devices with emphasis on SCR's, Triacs, and the firing circuits used to operate these devices; common emitter, common collector, and common base configurations.

Introduction to digital logic circuits, using transistors and diodes. Basic troubleshooting, soldering, and layout techniques.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

EIC 105 Electrical Blueprint Reading . . . . . 3 Cr. Hrs.
Introduction course of blueprint reading for commercial and industrial electrical applications.
45 Hrs. Theory 45 Ct. Hrs.

EIC 111 Solid State Devices For Electricians I. . . . . 3 Cr. Hrs.
Prerequisite: EIC 103 or consent of instructor
Basic properties of diodes, transistors, triacs, SCR's and other solid state devices. Application of solid state devices in control and power conversion. Circuits in equipment likely to be encountered in 60 cycle power installation.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 112 Solid State Devices For Electricians II . . . . . 3 Cr. Hrs.
Prerequisite: EIC 111
Applications of solid state devices applicable to industrial controls. Special emphasis is placed on solid state contactors and starters, proximity sensors, temperature probes, liquid level sensors and opto-electronic devices.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 115 Electrical Planning . . . . . 3 Cr. Hrs.
Planning of electrical system installations, starting from the blueprints, through to the completed job. Preparation of material lists, job sheets, time schedules for various phases of construction.
45 Hrs. Theory 45 Ct. Hrs.

EIC 120 Electricity For Construction Trades. . . . . 3 Cr. Hrs.
Orientation to the field of Electricity. General principals, initial techniques and skill development, and how Electricity relates to the various construction trades.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 121 Electrical Installations I . . . . . 3 Cr. Hrs.
Residential and commercial building wiring in conformance with the current National Electric Code and local codes. Basics of blueprint reading, planning and discussing representative systems using non-metallic cable and electric metallic tubing. Proper use of tools and safety is emphasized.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 122 Electrical Installations II. . . . . 3 Cr. Hrs.
Prerequisite: EIC 121
Commercial and industrial building wiring in conformance with the current National Electric Code and local codes, using electric metallic tubing and rigid conduit, and other raceways. Techniques of blueprint reading and symbols; proper use of tools and safety is emphasized.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 131 National Electric Code I . . . . . 3 Cr. Hrs.
National Electric Code and local code requirements for electrical installation.
45 Hrs. Theory 45 Ct. Hrs.

EIC 132 National Electric Code II. . . . . 3 Cr. Hrs.
Prerequisite: EIC 131 or consent of instructor
Continuation of EIC 131
45 Hrs. Theory 45 Ct. Hrs.

EIC 200 Electrical Calculations . . . . . 3 Cr. Hrs.
Calculations used in the application of the National Electric Code, sizing of branch circuit and feeder conductors and calculation of ratings of protective devices are emphasized.
45 Hrs. Theory 45 Ct. Hrs.

EIC 201 Transformer Installation & Theory . . . . . 3 Cr. Hrs.
Prerequisite: EIC 102 or consent of instructor
Installation and maintenance of transformers. Considerations of dry and liquid filled transformers; installations above and below grade, including vaults. Theory and operating characteristics of the various classes of transformers.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 202 AC & DC Machines, Installation & Theory . . . . . 3 Cr. Hrs.
Installation and maintenance of AC and DC machines, connections, multiple voltage, speed change, starting methods, and machine maintenance.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 203 Poly Phase Rotating Machines & Transformers . . . . . 3 Cr. Hrs.
Installing and maintenance of poly phase induction synchronous machines and transformers. Wye/Delta and Scott connections. Power factor control and analysis. Reduced voltage starting methods, multi-speed and voltage connections.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 205 Basic Electrical House Wiring . . . . . 3 Cr. Hrs.
Introduction course of wiring methods, using non-metallic cable (romex) with emphasis on installation techniques.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 207 Electrical Control Wiring For Plumbing, Heating, A.C. Trades . . . . . 3 Cr. Hrs.
Introduction to electrical controls for valves, limits, relays, pressure, and temperature. Wiring and installation techniques.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 211 Installation & Operation Of Distribution Systems I . . . . . 3 Cr. Hrs.
Installation and operation of electrical distribution systems 600 volts and below. Emphasis is secondary distribution and stand by power and switch gear.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 212 Installation & Operation Of Distributions Systems II . . . . . 3 Cr. Hrs.
Installation and operation of electrical primary distribution system, switch gear, system protection, and related metering of demand and power factor.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 215 Advanced Electrical Installation . . . . . 3 Cr. Hrs.
Prerequisite: EIC 121
Techniques of large commercial and industrial installations, relating to code, safety, and OSHA.
45 Hrs. Theory 45 Ct. Hrs.

EIC 216 Advanced Electrical Planning . . . . . 3 Cr. Hrs.
Prerequisite: EIC 215
Planning and layout of large commercial and industrial installations.
45 Hrs. Theory 45 Ct. Hrs.

EIC 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory — 45-360 Hrs. Lab. 60-375 Ct. Hrs.

EIC 299 Independent Study. . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Electricity Program, and is outside the program offering.
90 Hrs. Theory 90 Ct. Hrs.

BTR 125 Blueprint Reading For Construction Trades. . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 126 Blueprint Reading For Mechanical Trades . . . . . 4 Cr. Hrs.
Principles of interpreting blueprints and trade specifications common to the mechanical trades. Development of proficiency in making three-view and pictorial sketches.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 127 Building Inspection For Construction Trades. . . . . 4 Cr. Hrs.
Examination and evaluation of construction work in progress. Comparing and contrasting with recognized norms or standards to meet state and local building requirements.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 128 Estimating Residential Construction Costs. . . . . 4 Cr. Hrs.
Construction mathematical review, plan reading, specifications, excavation, take off estimates, concrete foundations, footings, caissons, and slabs. Rough structure, and full enclosure.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 129 Construction Material I . . . . . 4 Cr. Hrs.
Terminology, nomenclature, board footage, lumber, plywood, millwork, brick and cement will be covered by lecture and field trips.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 130 Construction Materials II . . . . . 4 Cr. Hrs.
Roofing, drywall, steel products, beams, stress graded lumber, and building codes will be covered by lecture and field trips.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

BTR 140 Overview Of Bricklaying, Carpentry, Electrical, & Plumbing Fields. . . . . 4 Cr. Hrs.
Relationship of each trade to the total construction project, and how coordinated efforts are regulated from beginning to completion.
45 Hrs. Theory — 23 Hrs. Lab. 68 Ct. Hrs.

ELECTRONIC DIGITAL TECHNOLOGY (R)
Certificate or Associate Degree

A comprehensive program designed to give a thorough understanding of digital electronics for job entry positions in companies which utilizes digital electronics and computer concepts, or to give job upgrading and refresher courses for people already employed in the field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELF 100	Fundamentals of AC/DC Electricity	9	180
ELF 105	Solid State Devices & Circuits	6	120
ELF 106	Digital Logic Devices & Circuits	9	180
ELF 107	Operational Amplifiers and A to D Converters	6	120
EDT 200	Introduction To Computers	9	180
EDT 205	Computer Troubleshooting	6	120
EDT 206	Interfacing/Computer Peripheral	9	180
EDT 236	Microprocessors	6	120
		60	1200

Required Related Courses

ENG 103	Technical Report Writing	3	45
	Math Electives	6	90
	Social Science Elective	3	45
	Electives	6	90
		18	270
	TOTAL REQUIRED HOURS	78	1470

Additional Major Courses

ELF 118	Basic of AC and DC Electricity	3	60
EDT 207	PDP 11 Computer Programming/Basic Hardware	6	120
EDT 208	PDP-11 Hardware	3	60
EDT 209	PDP-11 Interfacing	3	60
EDT 210	Introduction to Micro-Processors	3	60
EDT 215	Micro-Processor Programming	3	60
EDT 216	Practicums Of Micro-Processor Hardware	3	60
EDT 217	Micro-Processor Applications In Automatic Control Systems	3	60
EDT 218	Focal Programming (Self Paced)	3	60
EDT 219	Basic Programming (Self Paced)	3	60
EDT 220	Computer Terminals	3	60
EDT 225	Mini Computers (Self Paced)	6	120
EDT 226	Disk Concepts (Self Paced)	3	60
EDT 227	Tape Concepts (Self Paced)	3	60
EDT 228	Magnetic Recording (Self Paced)	3	60
EDT 229	Data Communications (Self Paced)	3	60
EDT 230	PDP-8E Computer (Self Paced)	6	120
EDT 235	PDP-11 Computer (Self Paced)	6	120
EDT 297	Cooperative Work Experience	2-9	60-375
EDT 299	Independent Study	3	90

ELF 100 Fundamentals of AC/DC Electricity . . . . . 9 Cr. Hrs.
Current, voltage, resistance and power in AC and DC circuits. Series, parallel and series-parallel circuit computations and measurements, troubleshooting procedures, properties of conductors and insulators. Soldering, basic test equipment and circuit analysis.
45 Hrs. Theory - 135 Hrs. Lab. 180 Ct. Hrs.

ELF 105 Solid State Devices & Circuits . . . . . 6 Cr. Hrs.
Prerequisite: ELF 100 or consent of instructor.
Analysis and interpretation of various circuits, using solid state devices with emphasis on SCR's, Triacs, and the firing circuits used to operate these devices. Common emitter, common collector, and common base configurations. Introduction to digital logic circuits, using transistors and diodes. Basic troubleshooting, soldering, and layout techniques.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

ELF 106 Digital Logic Devices & Circuits . . . . . 9 Cr. Hrs.
Prerequisite: ELF 105 or consent of instructor.
An introduction to digital circuits applicable to computers, instrumentation and industrial electronic students. Codes, logic gates, memory devices, counters, shift registers, and Boolean algebra. Basic troubleshooting techniques.
45 Hrs. Theory - 135 Hrs. Lab. 180 Ct. Hrs.

ELF 107 Operational Amplifiers & A to D Converters . . . . . 6 Cr. Hrs.
Prerequisite: ELF 106 or consent of intructor.
Advanced continuation of EDT 105 which deals with operational amplifiers and their use as voltage followers, inverting and non-inverting amplifiers, summing amplifiers, integrators and differentiators and applications of each; bridge circuits used in sensing and measuring equipment and electronic instruments; Analog to Digital conversion techniques and equipment as related to digital control of an analog system. Basic troubleshooting techniques.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

ELF 118 Basic of AC and DC Electricity . . . . . 3 Cr. Hrs.
Resistance, Current, Voltage, and Power in AC and DC circuits. Measurements, and computations of series and parallel circuits. Circuit analysis and trouble shooting with basic test equipment.
15 Hrs. Theory-45 Hrs. Lab 60 Ct. Hrs.

EDT 200 Introduction To Computers . . . . . 9 Cr. Hrs.
Prerequisite: ELF 107.
Machine language programming for maintenance; schematics, test specifications, operational procedures and circuits of a mini-computer.
45 Hrs. Theory - 135 Hrs. Lab. 180 Ct. Hrs.

EDT 205 Computer Troubleshooting . . . . . 6 Cr. Hrs.
Prerequisite: EDT 200.
Practical experience in troubleshooting a small commercial computer using associated test equipment utilized in isolating malfunctions to a card and chip level.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

EDT 206 Interfacing/Computer Peripheral . . . . . 9 Cr. Hrs.
Prerequisite: EDT 205.
Detailed descriptions and lab work involving interface construction and programming. Principles of operation, components, circuitry, and programming of various computer perpherial devices.
45 Hrs. Theory - 135 Hrs. Lab. 180 Ct. Hrs.

EDT 208 PDP-11 Hardware (Self Paced) . . . . . 3 Cr. Hrs.
Prerequisite: EDT 207.
Principles of operation and hardware associated with the Digital Equipment Corp. PDP-11. Details of unibus operation and block diagram study of computer functions.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 209 PDP-11 Interfacing . . . . . 3 Cr. Hrs.
Prerequisite: EDT 208.
Interfacing techniques of Digital Equipment Corp. PDP-11, with peripherals and lab experience, capabilities in building and testing and interface printed circuit board.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 210 Introduction To Micro-Processors . . . . . 3 Cr. Hrs.
Introduction course on the development and use of micro-processors, programming and hardware. Industrial orientated.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

EDT 215 Micro-Processor Programming . . . . . 3 Cr. Hrs.
Prerequisite: EDT 210.
Advance programming on Motorola 6800, Intel 8080, and Zilog Z280 computer techniques. Industrial orientated.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 216 Practicums Of Micro-Processor Hardware . . . . . 3 Cr. Hrs.
Prerequisite: EDT 215.
A continuation of EDT 215, with emphasis on hardware and practical applications. Industrial orientated.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 217 Micro-Processor Applications In Automatic Control Systems . . . . . 3 Cr. Hrs.
Prerequisite: EDT 215.
Applications specifically related to automatic control systems, hardware required, and programming.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 218 Focal Programming (Self Paced) . . . . . 3 Cr. Hrs.
Flow charting and programming using "FOCAL" to solve electronic problems.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 219 Basic Programming (Self Paced) . . . . . 3 Cr. Hrs.
Flow charting and programming using "BASIC" to solve electronic problems.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 220 Computer Terminals . . . . . 3 Cr. Hrs.
Prerequisite: Instructors Permission.
Principles of operation and hardware of various types of terminals; ie. teletype, video, DEC writer, and TV interfacing.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 225 Mini Computers (Self Paced) . . . . . 6 Cr. Hrs.
Prerequisite: Instructors Permission.
Introductory course to the principles of operation, functions and hardware of a mini computer.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

EDT 226 Disk Concepts (Self Paced) . . . . . 3 Cr. Hrs.
Prerequisite: Instructors Permission.
Operating principles, programming techniques, hardware, and the use of the disk as the main and external storage device in a computer system.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 227 Tape Concepts (Self Paced) . . . . . 3 Cr. Hrs.
Prerequisite: Instructions Permission or EDT 228.
Operating principles, functions, and hardware of magnetic tape units.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 228 Magnetic Recording (Self Paced) . . . . . 3 Cr. Hrs.
Prerequisite: Instructors Permission.
Magnetic recording techniques and hardware used in commercial tape units, disks, and other magnetic devices.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 229 Data Communications (Self Paced) . . . . 3 Cr. Hrs.
Prerequisite: Instructors Permission.
Operating principles and characteristics of equipment with an emphasis on terminal and computer-to-computer communication techniques.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

EDT 230 PDP-8E Computer (Self Paced) . . . . . 6 Cr. Hrs.
Advanced continuation of EDT 200, studying hardware circuits in detail, with flow timing sequence applications, using the Digital Equipment Corp. PDP-8E mini computer.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

EDT 235 PDP-11 Computer (Self Paced) . . . . . 6 Cr. Hrs.
Prerequisite: Instructors Permission.
Self paced adaptation of EDT 207.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

EDT 236 Microprocessors . . . . . 6 Cr. Hrs.
Hardware and programming of microprocessors with applications related to industrial systems.
30 Hrs. Theory-90 Hrs. Lab 120 Ct. Hrs.

EDT 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 45-360 Hrs. Lab. 60-375 Ct. Hrs.

EDT 299 Independent Study . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Electronic Program, and outside the program offerings.
90 Hrs. Lab. 90 Ct. Hrs.

ELECTRONICS TECHNOLOGY (A)
Certificate or Associate Degree

This program is designed to prepare individuals with job entry skills in assembly, test, repair, and maintenance areas and basic knowledge to advance into more detailed and specific areas with further training and experience.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELT 100	DC Fundamentals	3	60
ELT 105	DC Circuits and Magnetism	3	60
EDL 106	AC Fundamentals	3	60
ELT 107	AC Circuits	3	60
ELT 108	Vacuum Tube Fundamentals and Circuits	3	60
ELT 109	Solid State Fundamentals	3	60
ELT 110	Transistor Amplifiers	3	60
ELT 115	Transistor Oscillators and FET's	3	60
ELT 116	SCR, UJT, and Special Devices	3	60
ELT 117	IC Operational Amplifiers	3	60
ELT 200	Instruments and Measurements	6	120
ELT 205	Communications Systems	3	60
ELT 206	Pulse and Digital Fundamentals	3	60
ELT 207	Digital Circuits	3	60
ELT 208	Microprocessor Fundamentals	3	60
ELT 209	Trouble-shooting Techniques	3	60
ELT 210	Electronic Fabrication Techniques	6	120
ELT 215	Advanced Electronic Fabrication Techniques or one of the following: independent study, cooperative work experience, or an approved elective	3	60
		60	1200

Required Related Courses

	Math Elective	6	90
	General Studies Elective	3	45
	English Elective	3	45
		12	180
	TOTAL REQUIRED HOURS	72	1380

Additional Major Courses

ELT 216	Introduction to Electro-Mechanical Devices	3	60
ELT 297	Cooperative Work Experience		
ELT 299	Independent Study	3	90

ELT 100 DC fundamentals (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn about safety procedures, the relationship of current, voltage, resistance, and power and the use of various meters to measure current, voltage, and resistance in series and parallel circuits.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 105 DC Circuits and Magnetism (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to analyze series-parallel circuits, RC circuits, RL circuits, and the characteristics of magnetism, inductance, and capacitance.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 106 AC Fundamentals (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the AC relationships of resistance, inductive and capacitive reactance, phase, voltage, impedance, current, power, and turns ratio of the transformer.
Theory 24 Hr. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 107 AC Circuits (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will analyze frequency discriminating circuits involving series and parallel RL, RC, LC, and RCL circuits with applications as high pass, low pass, band pass, and band reject filters.
Theory 24 Hrs. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 108 Vacuum Tube Fundamentals and Circuits (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and explain biasing, coupling, decoupling, classes of operation, audio amplifiers, phase splitter, phase inverter, push-pull amplifiers, and oscillator circuits.
Theory 24 Hrs. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 109 Solid State Fundamentals (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to measure the AC and DC voltages of a half wave, full-wave, bridge, and voltage doubler power supply circuit and how to test and bias the transistor for correct operation.
Theory 24 Hrs. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 110 Transistor Amplifiers (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the characterisitcs associated with the common emitter, common base, common collector, and the operation of single-ended, feedback, complimentary, differential, phase splitter, phase inverters, and push-pull amplifiers.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 115 Transistor Oscillators and FET's (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the principle of regenerative feedback used to make oscillators work, plus the characteristics of the JFET configurations and MOSFETS.
Theory 24 Hrs. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 116 SCR's, UJT's, and Special Devices (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the symbols, characteristics, and circuit operation of the SCR, UJT, TRIAC, DIAC, varactor, thermistor, and thermocouple.
Theory 24 Hrs. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 117 IC Operational Amplifiers (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the considerations necessary in circuits using IC op amps such as output offset voltage, frequency compensation, slew rate, common mode rejection and their uses as amplifiers, integrators, differentiators, oscillators, and active filters.
Theory 24 Hrs. — Lab 36 Hrs. 60 Ct. Hrs.

ELT 200 Instruments and Measurements (A,N) . . 6 Cr. Hrs.
In this unit, the student will learn the concepts of measurements, selection of instruments, limitations, applications, calibration, and use of meters, oscilloscopes, signal generators, transistor curve tracers, and counters.
Theory 48 Hrs. - Lab 72 Hrs. 120 Ct. Hrs.

ELT 205 Communications Systems (A,N) . . . . . 3 Cr.Hrs.
In this unit, the student will learn the fundamental concepts of basic transmitters and receivers, amplitude, frequency, pulse modulation and demodulation, and the analysis of the circuitry involved.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

ELT 206 Pulse and Digital Fundamentals (N) . . . . . 3 Cr. Hrs.
In this unit the student will learn the principles of pulse and switching circuits, binary counting and arithmetic Boolean algebra, truth tables, digital logic, and the basic logic gates with analysis and synthesis of circuits.
40 Hrs. Theory - 20 Hrs. Lab 60 Ct. Hrs.

ELT 207 Digital Circuits (A,N) . . . . . 3 Cr. Hrs.
In this unit the student will learn octal and hexadecimal counting and various binary codes, logic circuit minimization by algebraic techniques and Karnaugh mapping and explore counters, registers, flip-flops and their operation.
40 Hrs. Theory - 20 Hrs. Lab 60 Ct. Hrs.

ELT 208 Microprocessor Fundamentals (A,N) . . . 3 Cr. Hrs.
In this unit, the student will learn the fundamentals of micropressors, micro and mini-computers, hardware description, and an introduction to assembly language programs.
Theory 30 Hrs. - Lab 30 Hrs. 60 Ct. Hrs.

ELT 209 Trouble-Shooting Techniques (A,N) . . . . 3 Cr. Hrs.
In this unit, the student will learn trouble analysis and trouble-shooting procedures using signal tracing, signal substitution, and in-circuit measurements to isolate and locate the malfunction.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 210 Electronic Fabrication Techniques (A,N) . . . . . 6 Cr. Hrs.
In this unit, the student will learn tool use, shop practices, safety, soldering, component mounting, chassis preparation, power tool operation, printed circuit layout, artwork techniques, board preparation, etching, and photographic darkroom practices.
Theory 40 Hrs. - Lab 80 Hrs. 120 Ct. Hrs.

ELT 215 Advanced Electronic Fabrication Techniques (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn double-sided board layout using the two color filtration process and advanced electronic assembly techniques, or, with an advisor's permission, independent study, cooperative work experience, or an elective may be taken.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

ELT 216 Introduction to Electro-Mechanical Devices (A,N) . . . . . 3 Cr. Hrs.
This course introduces the student to alternating and direct current motors, single and three-phase power concepts, and associated control and measurement methods.
Theory 20 Hrs.-Lab 40 Hrs. 60 Ct. Hrs.

ELT 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

ELT 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Electronics Technology Program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

ELECTRONICS TECHNOLOGY (N)
Two-Year Certificate and/or Associate Degree.

This program is designed to prepare individuals with job entry skills in assembly, test, repair, and maintenance areas and basic knowledge to advance into more detailed and specific areas with further training and experience.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

SOLID STATE DEVICES (15 WK Certificate)

		Cr. Hrs.	Ct. Hrs.
ELT 109	Solid State Fundamentals	3	60
ELT 110	Transistor Amplifiers	3	60
ELT 115	Transistor Oscillators and FET's	3	60
ELT 116	SCR, ULT, and Special Devices	3	60
ELT 117	IC Operational Amplifiers	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

DIGITAL/MICRO-PROCESSORS (9 WK Certificate)

ELT 206	Pulse and Digital Fundamentals	3	60
ELT 207	Digital Circuits	3	60
ELT 208	Microprocessor Fundamentals	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

PRINTED CIRCUIT DEVELOPMENT (6 WK Certificate)

ELT 210	Electronic Fabrication Techniques	6	120

CHECK WITH ADVISOR FOR PREREQUISITES

Two Year Certificate And/or Associate Degree

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELT 100	DC Fundamentals	3	60
ELT 105	DC Circuits and Magnetism	3	60
ELT 106	AC Fundamentals	3	60
ELT 107	AC Circuits	3	60
ELT 108	Vacuum Tube Fundamentals and Circuits	3	60
ELT 109	Solid State Fundamentals	3	60
ELT 110	Transistor Amplifiers	3	60
ELT 115	Transistor Oscillators and FET's	3	60
ELT 116	SCR, UJT, and Special Devices	3	60
ELT 117	IC Operational Amplifiers	3	60
ELT 200	Instruments and Measurements	6	120
ELT 205	Communications Systems	3	60
ELT 206	Pulse and Digital Fundamentals	3	60
ELT 207	Digital Circuits	3	60
ELT 208	Microprocessor Fundamentals	3	60
ELT 209	Trouble-shooting Techniques	3	60
ELT 210	Electronic Fabrication Techniques	6	120

Required Related Courses

Math Elective	6	96
Science Elective	3	45
English Elective	3	45
	12	186
TOTAL REQUIRED HOURS	72	1386

Additional Major Courses

ELC 200	FCC Second Class Radio/ Telephone License Prep. 8	120
ELT 297	Cooperative Work Experience 3	105
ELT 299	Independent Study 3	90

ELT 100 DC Fundamentals (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn safety procedures, the relationship of current, voltage, resistance and power and the use of various meters to measure current, voltage, and resistance in series and parallel circuits.
Theory 24 Hrs.-Lab 36 Hrs. 60 Ct. Hrs.

ELT 105 DC Circuits and Magnetism (A,N). . . . . 3 Cr. Hrs.
In this unit, the student will learn to analyze series-parallel circuits, RC circuits, RL circuits, and the characteristics of magnetism, inductance, and capacitance.
Theory 24 Hrs.-Lab 36 Hrs. 60 Ct. Hrs.

ELT 106 AC Fundamentals (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the AC relationships of resistance, inductive and capacitive reactance, phase, voltage, impedance, current, power, and turns ratio of the transformer.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 107 AC Circuits (A,N). . . . . 3 Cr. Hrs.
In this unit, the student will analyze frequency discriminating circuits involving series and parallel RL, RC, LC, and RCL circuits with applications as high pass, low pass, band pass, and band reject filters.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 108 Vacuum Tube Fundamentals and Circuits (A,N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and explain biasing, coupling, decoupling, classes of operation, audio amplifiers, phase splitter, phase inverter, push-pull amplifiers, and oscillator circuits.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 109 Solid State Fundamentals (A,N). . . . . 3 Cr. Hrs.
In this unit, the student will learn to measure the AC and DC voltages of a half-wave, full-wave, bridge, and voltage doubler power supply circuit and how to test and bias the transistor for correct linear operation.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 110 Transistor Amplifiers (A,N). . . . . 3 Cr. Hrs.
In this unit, the student will learn the characteristics associated with the common emitter, common base, common collector, and the operation of single-ended, differential, phase splitter, phase inverters, and push-pull amplifiers.
Theory 24 Hrs.-Lab 36 Hrs. 60 Ct. Hrs.

ELT 115 Transistor Oscillators and FET's (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the principle of regenerative feedback used to make oscillators work, plus the characteristics of the JFET configurations and MOSFETS.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 116 SCR's, UJT's, and Special Devices (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the symbols, characteristics, and circuit operation of the SCR, UJT, TRIAC, DIAC, varactor and thermistor.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 117 IC Operational Amplifiers (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn the considerations necessary in circuits using IC op amps such as output offset voltage, frequency compensation, slew rate, common mode rejection and their uses as amplifiers, integrators, differentiators, oscillators, and active filters.
Theory 24 Hrs. - Lab 36 Hrs. 60 Ct. Hrs.

ELT 200 Instruments and Measurements (N) . . . 6 Cr. Hrs.
In this unit, the student will learn the concepts of measurements, selection of instruments, limitations, applications, and use of meters, oscilloscopes, signal generators, transistor curve tracers, and counters.
Theory 48 Hrs.-Lab 72 Hrs. 120 Ct. Hrs.

ELT 205 Communications Systems (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn the fundamental concepts of basic transmitters and receivers, amplitude, frequency, modulation and demodulation, and the analysis of the circuitry involved.
Theory 30 Hrs.-Lab 30 Hrs. 60 Ct. Hrs.

ELT 206 Pulse and Digital Fundamentals (A,N) . . . . . 3 Cr. Hrs.
In this unit the student will learn the principles of pulse and switching circuits, binary counting and arithmetic Boolean algebra, truth tables, digital logic, and the basic logic gates with analysis and synthesis of circuits.
40 Hrs. Theory-20 Hrs. Lab 60 Ct. Hrs.

ELT 207 Digital Circuits (A,N). . . . . 3 Cr. Hrs.
In this unit the student will learn octal and hexadecimal counting and various binary codes, logic circuit minimization by algebraic techniques and Karnaugh mapping and explore counters, registers, flip-flops and their operation.
40 Hrs. Theory-20 Hrs. Lab 60 Ct. Hrs.

ELT 208 Microprocessor Fundamentals (A) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the fundamentals of micropressors, micro and mini-computers, hardware description, and an introduction to assembly language programs.
Theory 30 Hrs.-Lab 30 Hrs. 60 Ct. Hrs.

ELT 209 Trouble-Shooting Techniques (A). . . . . 3 Cr. Hrs.
In this unit, the student will learn trouble analysis and trouble-shooting procedures using signal tracing, signal substitution, and in-circuit measurements to isolate and locate the malfunction.
Theory 24 Hrs.-Lab 36 Hrs. 60 Ct. Hrs.

ELT 210 Electronic Fabrication Techniques (A) . . . . . 6 Cr. Hrs.
In this unit, the student will learn tool use, shop practices, safety, soldering, component mounting, chassis preparation, power tool operation, printed circuit layout, artwork techniques, board preparation, etching, and photographic darkroom practices.
Theory 40 Hrs.-Lab 80 Hrs. 120 Ct. Hrs.

ELC 200 FCC 2nd Class Radio Telephone License Preparation (N) . . . . 8 Cr. Hrs.
The student will discuss basic law and operating practices (FCC elements I and II), study basic radio telephone theory (FCC element III), and prepare for FCC 2nd Class Radio Telephone License examination.
120 Hrs. Theory 120 Ct. Hrs.

ELT 297 Cooperative Work Experience (A) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory-90 Hrs. Lab 105 Ct. Hrs.

ELT 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Electronics Technology Program, and is outside the program offering.
90 Hrs. Lab. 90 Ct. Hrs.

INDUSTRIAL MAINTENANCE TECHNOLOGY (R)
Certificate or Associate Degree

A program designed for improving the general knowledge required for the technician to advance into positions of increasing responsibility in the field of Industrial Process Control and AC Power Technology.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELF 100	Fundamentals of AC/DC Electricity	9	180
ELF 105	Solid State Devices & Circuits.	6	120
ELF 106	Digital Logic Devices & Circuits.	9	180
ELF 107	Operational Amplifiers, & A to D Converters	6	120
IMA 200	Electronic/Pneumatic Instrumentation	9	180
EIC 201	Transformer Installation	3	60
EIC 202	AC & DC Machines, Installation & Theory	3	60
EIC 203	Poly Phase Rotating Machines & Transformers	3	60
IMA 205	Industrial Control Systems.	9	180
	Technical Electives.	6	120
(Advisor's Prior Approval Required)		60	1200

Required Related Courses

PHY 101	Fundamental Physics I	3	45
	Math Electives	6	90
	Elective	3	45
	English Elective	3	45
		15	225
	TOTAL REQUIRED HOURS	75	1425

Additional Major Courses

ELF 118	Basic AC and DC Electricity	3	60
IMA 206	Automatic Control Loops	6	120
IMA 207	Industrial Process Control Loops	6	120
IMA 297	Cooperative Work Experience	2-9	60-375
IMA 299	Independent Study	3	90

ELF 100 Fundamentals of AC/DC Electricity . . . . . 9 Cr. Hrs.
Current, voltage, resistance and power in AC and DC circuits. Series, parallel and series-parallel circuit computations and measurements, troubleshooting procedures, properties of conductors and insulators. Soldering, basic test equipment and circuit analysis.
45 Hrs. Theory — 135 Hrs. Lab 180 Ct. Hrs.

ELF 105 Solid State Devices & Circuits . . . . . 6 Cr. Hrs.
Prerequisite: ELF 100 or consent of instructor.
Analysis and interpretation of various circuits using solid state devices with emphasis on SCR's, Triacs, and the firing circuits used to operate these devices; common emitter, common collector, and common base configurations. Introduction to digital logic circuits, using transistors and diodes. Basic troubleshooting, soldering, and layout techniques.
30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

ELF 106 Digital Logic Devices & Cricuits . . . . . 9 Cr. Hrs.
Prerequisite: ELF 105 or consent of instructor.
An introduction to digital circuits applicable to computers, instrumentation and industrial electronic students. Codes, logic gates, memory devices, counters, shift registers, and Boolean algebra. Basic troubleshooting techniques.
45 Hrs. Thoery - 135 Hrs. Lab. 180 Ct. Hrs.

ELF 107 Operational Amplifiers & A to D Converters. . . . . 6 Cr. Hrs.
Prerequisite: ELF 106 or consent of instructor.
Advanced continuation of EDT 105, which deals with operational amplifiers and their use as voltage followers, inverting and non-inverting amplifiers, summing amplifiers, integrators and differentiators and applications of each; bridge circuits used in sensing and measuring equipment and electronic instruments; Analog to Digital conversion techniques and equipment as related to digital control of an analog system. Basic troubleshooting techniques.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

ELF 118 Basic of AC and DC Electricity . . . . . 3 Cr. Hrs.
Resistance, Current, Voltage, and Power in AC and DC Circuits. Measurements computations of series and parallel circuits. Circuit analysis and trouble-shooting with basic test equipment.
15 Theory Hrs.-45 Hrs. Lab 60 Ct. Hrs

IMA 200 Electronic/ Pneumatics Instrumentation . . . . . 9 Cr. Hrs.
Prerequisite: ELF 106.
Principles of pneumatics and electronics as applied to industrial control in the sensing, controlling, indicating, and recording of the process variables of flow, temperature, pressure and level.
45 Hrs. Theory — 135 Hrs. Lab. 180 Ct. Hrs.

EIC 201 Transformer Installation & Theory . . . . . 3 Cr. Hrs.
Prerequisite: EIC or consent of instructor
Installation and maintenance of transformers. Considerations of dry and liquid filled transformers; installations above and below grade, including vaults. Theory and operating characteristics of the various classes of transformers.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 202 AC & DC Machines, Installation & Theory . . . . . 3 Cr. Hrs.
Installation and maintenance of AC and DC machines, connections, multiple voltage, speed change, starting methods, and machine maintenance.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

EIC 203 Poly Phase Rotating Machines & Transformers . . . . . 3 Cr. Hrs.
Installing and maintenance of poly phase induction syn-

chronous machines and transformers. Wye/Delta and Scott connections. Power factor control and analysis. Reduced voltage starting methods, multi-speed and voltage connections.
15 Hrs. Theory — 45 Hrs. Lab. 60 Ct. Hrs.

IMA 205 Industrial Control Systems. . . . . 9 Cr. Hrs.
Prerequisite: EIC 203
Manual and automatic speed control of DC and induction motors, solid state variable speed and variable frequency drives, solid state sequential controllers, and automatic feedback control loops. Microprocessor controlled systems, numeric process control, and computer controlled plants.
45 Hrs. Theory — 135 Hrs. Lab 180 Ct. Hrs.

IMA 206 Automatic Control Loops . . . . . 6 Cr. Hrs.
Prerequisite: IMA 200 or Advisor's Approval
Principles of operation and application of valves, and actuators in an industrial control coop; the concepts of automatic process control; the modes of control and timing; proportional derivative ratio, and cascade process loops.
30 Hrs. Theory-90 Hrs. Lab 120 Ct. Hrs.

IMA 207 Industrial Process Control Loops . . . . . 6 Cr. Hrs.
Prerequisite: IMA 206 or Advisor's Approval
Applications of automatic process control loops previously covered in IMA 200 and 205, for both pneumatic and electronic systems. Specific control applications are, furnace, pipeline, pollution (pH), boiler, and mixing.
30 Hrs. Theory-90 Hrs. Lab 120 Ct. Hrs.

IMA 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory-45-360 Hrs. Lab. 60-375 Ct. Hrs.

IMA 299 Independent Study. . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Electricity Program, and is outside the program offering.
90 Hrs. Lab. 90 Ct. Hrs.

INSTRUMENTATION TECHNOLOGY (A)
Associate Degree

This program is designed to prepare individuals with job entry skills in assembly, test, repair, and maintenance areas and basic knowledge to advance into more detailed and specific areas with further training and experience.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ELT 100	DC Fundamentals	3	60
ELT 105	DC Circuits and Magnetism	3	60
ELT 106	AC Fundamentals	3	60
ELT 107	AC Circuits	3	60
ELT 108	Vacuum Tube Fundamentals and Circuits	3	60
ELT 109	Solid State Fundamentals	3	60
ELT 110	Transistor Amplifiers	3	60
ELT 115	Transistor Oscillators and FET's	3	60
ELT 116	SCR, UJT, and Special Devices	3	60
ELT 117	IC Operational Amplifiers	3	60
ELT 200	Instruments and Measurements	6	120
INT 201	Measurement Principles I	3	60
INT 202	Measurement Principles II	3	60
ELT 206	Pulse and Digital Fundamentals	3	60
ELT 205	Communication Systems	3	60
ELT 209	Trouble-Shooting Techniques	3	60
ELT 210	Electronic Fabrication Techniques or one of the following: independent study, cooperative work experience or an approved elective	6	120
ELT 216	Introduction to Electro-Mechanical Devices	3	60
		60	1200

Required Related Courses

Mathematics Elective	6	90
General Studies Elective	3	45
English Elective	3	45
	12	180
TOTAL REQUIRED HOURS	72	1380

INSTRUMENTATION TECHNOLOGY (A)

ELT 100 DC Fundamentals (A, N). . . . . 3 Cr. Hrs.
In this unit, the student will learn safety procedures, the relationship of current, voltage, resistance, and power and the use of various meters to measure current, voltage, and resistance in series and parallel circuits.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 105 DC Circuits and Magnetism (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to analyze series-parallel circuits, RC circuits, RL circuits, and the characteristics of magnetism, inductance, and capacitance.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 106 AC FUNDAMENTALS (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the AC relationships of resistance, inductive and capacitive reactance, phase, voltage, impedance, current, power, and turns ratio of the transformer.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 107 AC Circuits (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will analyze frequency discriminating circuits involving series and parallel RL, RC, LC, and RCL circuits with applications as high pass, low pass, band pass, and band reject filters.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 108 Vacuum Tube Fundamentals and Circuits (A, N). . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and explain biasing, coupling, decoupling, classes of operation, audio amplifiers, phase splitter, phase inverter, push-pull amplifiers, and oscillator circuits.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 109 Solid State Fundamentals . . . . . 3 Cr. Hrs.
In this unit, the student will learn to measure the AC and DC voltages of a half wave, full-wave, bridge, and voltage doubler power supply circuit and how to test and bias the transistor for correct operation.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 110 Transistor Amplifiers (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the characteristics associated with the common emitter, common base, common collector, and the operation of single-ended, differential, phase splitter, phase inverters, and push-pull amplifiers.
24 Hrs. Theory — 36 Hrs. Lab 60 Ct. Hrs.

ELT 115 Transistor Oscillators and FET's (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the principle of

regenerative feedback used to make oscillators work, plus the characteristics of the JFET configurations and MOSFETS.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 116 SCR's, UJT's, and Special Devices (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the symbols, characteristics, and circuit operation of the SCR, UJT, TRIAC, DIAC, varactor, thermistor, and thermocouple.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 117 IC Operational Amplifiers (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the considerations necessary in circuits using IC op amps such as output offset voltage, frequency compensation, slew rate, common mode rejection and their uses as amplifiers, integrators, differentiators, oscillators, and active filters.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 200 Instruments and Measurements (A, N) . . . . . 6 Cr. Hrs.
This unit will give the student the concepts of measurements, selection of instruments, limitations, applications, and use of meters, oscilloscopes, signal generators, transistor curve tracers, and counters.
48 Hrs. Theory — 72 Hrs. Lab 120 Ct. Hrs.

INT 201 Measurement Principles I (A) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the servicing of operational amplifiers, and other solid state units. Calibration principles will be stressed.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

INT 202 Measurement Principles II (A) . . . . . 3 Cr. Hrs.
The use of special purpose test equipment will be learned by the student. This will include wave analysis, digital metering equipment and pulse testing units. Emphasis will be placed on application.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 205 Communications Systems (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the fundamental concepts of basic transmitters and receivers, amplitude, frequency, pulse modulation and demodulation, and the analysis of the circuitry involved.
Theory 30 Hrs. — Lab 30 Hrs. 60 Ct. Hrs.

ELT 206 Pulse and Digital Fundamentals (A, N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the principles of pulse and switching circuits, binary counting and arithmetic Boolean algebra, truth tables, digital logic, and the basic logic gates with analysis and synthesis of circuits.
20 Theory Hrs. - 40 Lab Hrs. 60 Ct. Hrs.

ELT 209 Trouble-Shooting Techniques (A, N) . . . 3 Cr. Hrs.
The student will learn trouble analysis and trouble-shooting procedures using signal tracing, signal substitution, and in-circuit measurement to isolate and locate the malfunction.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 210 Electronic Fabrication Techniques (A, N) . . . . . 6 Cr. Hrs.
In this unit, the student will learn tool use, shop practices, safety, soldering, component mounting, chassis preparation, power tool operation, printed circuit layout, artwork techniques, board preparation, etching and photographic darkroom practices.
Theory 40 Hrs. — Lab 80 Hrs. 120 Ct. Hrs.

ELT 216 Introduction to Electro-Mechanical Devices (A, N) . . . . . 3 Cr. Hrs.
This course introduces the student to alternating and direct current motors, single and three-phase power concepts, and associated control and measurements methods.
Theory 20 Hrs. — Lab 40 Hrs. 60 Ct. Hrs.

VENDING MACHINE TECHNOLOGY (A)
Certificate or Associate Degree

This program is designed to prepare individuals with job entry skills for the vending field. The program places emphasis on both service and maintenance of vending machines.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
VMT 100	DC Fundamentals	3	60
VMT 105	DC Circuits and Magnetism	3	60
VMT 106	AC Fundamentals	3	60
VMT 107	AC Circuits	3	60
VMT 108	Vacuum Tube Fundamentals and Circuits	3	60
VMT 109	Introduction to Vending	3	60
VMT 111	Manually Operated Machines I	3	60
VMT 112	Manually Operated Machines II	3	60
VMT 121	Electrically Operated Machines I	3	60
VMT 122	Electrically Operated Machines II	3	60
VMT 200	Hot Drink Vending	3	60
VMT 205	Vending Machine Changes	3	60
VMT 206	Cup Dispensers	3	60
VMT 207	Cold Beverage Vending	3	60
VMT 208	Carbon Dixoide	3	60
VMT 209	Hot and Cold Food Vending	3	60
VMT 210	Milk and Ice Cream Vending	3	60
VMT 215	Vending Machine Refrigeration	3	60
VMT 216	Coin and Bill Changer	3	60
VMT 217	Electronic Devices	3	60
		60	1200

Required Related Courses

English Elective	3	45
Physics Elective	3	75
Mathematics Elective	6	90
	12	210
TOTAL REQUIRED HOURS	72	1410

VENDING MACHINE TECHNOLOGY (A)

VMT 100 DC Fundamentals . . . . . 3 Cr. Hrs.
In this unit, the student will learn about safety procedures, the relationship of current, voltage, resistance and power and the use of various meters to measure current, voltage and resistance in series and parallel circuits.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 105 DC Circuits and Magnetism . . . . . 3 Cr. Hrs.
In this unit, the student will learn to analyze series-parallel circuits, RC circuits, RL circuits, and the characterisitcs of magnetism, inductance and capacitance.
24 Hrs. Theory - 36 Hrs. Lab

VMT 106 AC Fundamentals . . . . . 3 Cr. Hrs.
In this unit, the student will learn the AC relationships of resistance inductive and capacitive reactance, phase, voltage, impedance, current, power, and turns ratio of the

transformer.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 107 AC Circuits . . . . . 3 Cr. Hrs.
In this unit, the students will analyze frequency discriminating circuits involving series and parallel RL, RC, LC, and RCL circuits with applications as high pass, low pass, bond pass, and band reject filters.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 108 Vacuum Tube Fundamentals and Circuits . . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and explain biasing, coupling, decoupling, classes of operation, audio amplifiers, phase splitter, phase inverter, push-pull amplifiers, and oscillator circuits.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 109 Introduction to Vending . . . . . 3 Cr. Hrs.
This course is designed to teach trainess the different types of vending machines. Safety in the maintenance and repair. Repair and maintenance of automatic vending machines.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 111 Manually Operated Machines I. . . . . 3 Cr. Hrs.
In this unit, the student will learn the sequence of operation of the different manually operated machines. The repair and maintenance of different manually operated machines.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 112 Manually Operated Machines II . . . . . 3 Cr. Hrs.
This unit is a continuation of Manually Operated Machines I. The student will further advance into the maintenance of manually operated machines. The student will study the various coin mechanisms that are used in these vending machines.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 121 Electricity Operated Machines I. . . . . 3 Cr. Hrs.
In this unit, the student will learn the sequence of operation of the electrically operated vending machines such as the candy, pastry, cigarette machines. The repair and maintenance of some of these machines will be covered.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 122 Electrically Operated Machines II . . . . . 3 Cr. Hrs.
The student, in this unit, will have a continuation of the Electrically Operated Machines I. Coin mechanisms, operating units and schematic diagrams for these vending machines will be taught.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 200 Hot Drink Vending . . . . . 3 Cr. Hrs.
In this unit, the student will learn the principles of coffee machines. The coffee brew systems, hot water systems, product dispensing for the different types of coffee. Simulated troubles and break-downs and the techniques involved in the repair.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 205 Vending Machine Changers . . . . . 3 Cr. Hrs.
The student will learn the different types of coin changers that are used in the various vending machines. Price changes and repair of these coin changers, replacement of their parts, and troubleshooting techniques.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 206 Cup Dispensers . . . . . 3 Cr. Hrs.
The different types of cup dispensers used in vending machines and the adjustments of these will be studied by the student. Simulated troubles and the techniques in their repair.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 207 Cold Beverage Vending . . . . . 3 Cr. Hrs.
The student will study the basic fundamentals of the cold drink vending machine. Repair and adjustment of the water system, syrup pumps, control panel, selection unit, electric circuits, and schematic reading will also be studied.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 208 Carbon Dioxide Systems . . . . . 3 Cr. Hrs.
The student will learn the principles of the carbon dioxide systems. What these systems are used for and their function in a vending machine. Adjustment and replacement of the different parts to this system.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 209 Hot and Cold Food Vending . . . . . 3 Cr. Hrs.
The student will learn the sequence of operation of both the hot and cold food vending machine. The heating methods used. Replacement of heating units. Controls, switches and fuses used on these hot and cold vending machines, troubleshooting, repair and maintenance.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 210 Milk and Ice Cream Vending. . . . . 3 Cr. Hrs.
The student will study the operating principles of these vending machines. Disassemble and reassemble different components. Adjustment and operation of the different controls, switches, troubleshooting for different malfunctions.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 215 Vending Machine Refrigeration . . . . . 3 Cr. Hrs.
Refrigeration components will be tested and replaced with accuracy. The student will learn how to replace the complete refrigeration units of the different types of vending machines, recharging the unit, the ways that the refrigeration unit is used in vending machines.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 216 Coin and Bill Changers. . . . . 3 Cr. Hrs.
The student will learn both the manually operated and the electric changers. Routine service of a bill changer and coin changer. Operational sequence, repair, adjustment, and alignment of the changers.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

VMT 217 Electronic Devices . . . . . 3 Cr. Hrs.
In this unit, the student will learn the fundamentals of the microwave oven. The precautions to avoid possible exposure to excessive microwave energy. Radio frequency emission and how to stop or control it. Controls and timers, and schematics.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

MACHINE SHOP

MACHINE SHOP

Machine Shop (N)
Two Year Certificate and/or
Associate Degree.

This program provides the student with job entry skills for the machine trades field and upgrading for those in the field who need to acquire more skill. The program emphasis is job shop machining.

Machine Shop is structured on a 3 week, 60 contact hour module; however, a great deal of flexibility exists. A full load would be five of the three hour modules offered concurrently.

Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors. A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty ad-

vising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Machine Shop student may select the job entry skills he/she wants to develop. The student may certify as having entry level skills as a lather operator in 27 weeks, a mill operator in 24 weeks, a grinding machine operator in 21 weeks, and/or a machine maintenance operator in 39 weeks as well as the entire two year certificate.

The machine shop program uses an individualized, self paced, multi-media instructional approach. Faculty lectures and/or small group demonstration is incorporated with hands-on practical laboratory experience.

New students need not wait for the next formal registration as they may be admitted to the machine shop program at any time providing an opening exists.

A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the students will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

LATHE OPERATOR
27 Week Certificate

MAS 100	Introduction to Machine Shop	3	60
MAS 101	Engine Lathe Setups and Operations I	3	60
MAS 102	Engine Lathe Setups and Operations II	3	60
MAS 103	Engine Lathe Setups and Operations III	3	60
MAS 104	Engine Lathe Setups and Operations IV	3	60
MAS 105	Drafting for Machinists	3	60
MAS 205	Tracing Lathe Setups and Operations	3	60
MAS 206	Turret Lathe and Automatic Screw Machines	3	60
MAS 211	Job Shop Machining I	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

MILL OPERATOR
24 Week Certificate

MAS 105	Drafting for Machinists	3	60
MAS 111	Vertical Mill Setups and Operations I	3	60
MAS 112	Vertical Mill Setups and Operations II	3	60
MAS 115	Horizontal Mill Setups and Operations	3	60
MAS 116	Milling Machine Setups and Operations	3	60
MAS 207	Point to Point Numerical Control	3	60
MAS 212	Job Shop Machining II	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

GRINDING MACHINE OPERATOR
21 Week Certificate

MAS 105	Drafting for Machinists	3	60
MAS 201	Surface Grinder Setups and Operations	3	60
MAS 202	Cylindrical Grinder and Tool and Cutter Grinder	3	60
MAS 216	Grinding Machine Setups and Operations	6	120
MAS 213	Job Shop Machining III	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

MACHINE MAINTENANCE OPERATOR
39 Week Certificate

MAS 219	Machine Maintenance and Repair	6	120
MAS 220	Scraping Techniques	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

Two Year Certificate and/or 2 Yr. Associate Degree

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
MAS 100	Introduction to Machine Shop	3	60
MAS 101	Engine Lathe Setups and Operations I	3	60
MAS 102	Engine Lathe Setups and Operations II	3	60
MAS 103	Engine Lathe Setups and Operations III	3	60
MAS 104	Engine Lathe Setups and Operations IV	3	60
MAS 105	Drafting for Machinists	3	60
MAS 111	Vertical Mill Setups and Operations I	3	60
MAS 112	Vertical Mill Setups and Operations II	3	60
MAS 115	Horizontal Mill Setups and Operations	3	60
MAS 116	Milling Machine Setups and Operations	3	60
MAS 201	Surface Grinder Setups and Operations	3	60
MAS 202	Cylindrical Grinder and Tool and Cutter Grinder	3	60
MAS 205	Tracing Lathe Setups and Operations	3	60
MAS 206	Turret Lathe and Automatic Screw Machines	3	60
MAS 207	Point to Point Numerical Control	3	60
MAS 211	Job Shop Machining I	3	60
MAS 212	Job Shop Machining II	3	60
MAS 213	Job Shop Machining III	3	60
MAS 214	Job Shop Machining IV	3	60
MAS 215	Job Shop Machining V or one of the following: electives, independent study, or cooperative work experience	3	60
		60	1200

Required Related Courses

English Elective	3	45
Math Elective	4	64
Social Science Elective	3	45
	10	154
TOTAL REQUIRED HOURS	70	1354

Additional Major Courses

MAS 216	Grinding Machine Setups and Operations	6	120
MAS 217	Introduction to Structure of Metals	4	60
MAS 218	Introduction to Die Making	6	120
MAS 219	Machine Maintenance and Repair	6	120
MAS 220	Scraping Techniques	3	60
MAS 225	Introduction to Electro Discharge Machining	3	60
MAS 226	Turning Machine Theory	3	45
MAS 227	Milling Machine Theory	3	45
MAS 228	Grinding Machine Theory	3	45
MAS 229	Using Machine Shop Formulas	3	45
MAS 230	Machine Shop Measuring Instrument Theory	3	45
MAS 235	Blue Print Reading	3	45
MAS 297	Cooperative Work Experience	3	105
MAS 299	Independent Study	3	90

MAS 100 Introduction to Machine Shop (N) ..... 3 Cr. Hrs.
The student will demonstrate an understanding or knowledge of how the Machine Shop program operates, general shop rules, general machine shop safety, saw safety, drilling safety and engine lathe safety; in addition, be able to read simple shop drawings, use bench tools, measuring instruments, layout tools, power saws, grind a lathe bit, sharpen a drill, use taps and identify the engine lathe parts and relate their functions.
30 Hrs. Theory-30 Hrs. Lab 60 Ct. Hrs.

MAS 101 Engine Lathe Setups and Operations I (N) ..... 3 Cr. Hrs.
The student will be able to mount chucks and drive plates on a threaded, camlock, or tapered key drive lathe spindle nose, set up a lathe bit, face a part, turn diameters, use a center drill, drill a hole, bore a hole, generate 90° shoulders, use a mandrill, adjust speeds and feeds. Resharpen a lathe bit, chamfer internally and externally with a compound, knurl a part, machine grooves, and work within tolerances specified on drawings from 1/64 to .001.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 102 Engine Lathe Setups and Operations II (N) ..... 3 Cr. Hrs.
The student will be able to set up a round and square part in a four-jaw chuck within .001 using a dial indicator. Use a sine bar to set up for tapering, hold concentricity within .0005, machine part to metric dimensions and machine internal and external diameters within .0005 tolerance.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 103 Engine Lathe Setups and Operations III (N) ..... 3 Cr. Hrs.
The student will be able to set up a round a square part in a four-jaw chuck within .001 using a dial indicator. Use a sine bar to set up for tapering, hold concentricity within .0005, machine part of metric dimensions and machine internal and external diameters within .0005 tolerance.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

MAS 104 Engine Lathe Setups and Operations IV (N) ..... 3 Cr. Hrs.
The student will be able to write their own lathe process sheets and machine with a greater degree of efficiency and skill.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 105 Drafting for Machinists (N) ..... 3 Cr. Hrs.
The student will demonstrate an understanding of orthographic projection, be able to interpret symbols, notes, dimensions, tolerances, make shop sketches and read industrial drawings of machine parts.
20 Hr. Theory-40 Hr. Lab 60 Ct. Hrs.

MAS 111 Vertical Mill Setups and Operations I (N) ..... 3 Cr. Hrs.
The student will identify the vertical milling machine parts and note their functions, be able to setup and indicate a vise, use an edge locater, mill flat surface, square a workpiece, mill slots, adjust dials, drill and bore holes, tap holes, determine and adjust speeds and feeds and work within plus or minus .002 tolerance.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 112 Vertical Mill Setups and Operations II (N) ..... 3 Cr. Hrs.
The student will be able to sweep in the head of the vertical mill, set up and operate a simple indexing head, set up and operate a rotary table, figure coordinate locations for hole circles, drill holes using the jig bore by the coordinate method and work within plus or minus .001 to tolerance.
20 Hr. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 115 Horitonzal Mill Setups and Operations ..... 3 Cr. Hrs.
The student will be able to identify the horizontal milling machine parts and relate their functions, be able to identify horizontal mill accessories, select cutters for various operations, mill slots, slap mill, square a work-piece, form mill and work to tolerances of plus or minus .002.
20 Hrs. Theory-40 Hr. Lab. ..... 60 Ct. Hrs.

MAS 116 Milling Machine Setups and Operations (N) ..... 3 Cr. Hrs.
The student will be able to write their own milling machine process sheets and machine more difficult parts with a greater degree of skill and efficiency.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 201 Surface Grinder Setups and Operations (N) ..... 3 Cr. Hrs.
The student will identify the surface grinder parts and note their functions, demonstrate an understanding of grinding wheel markings and be able to mount and true a grinding wheel. Grind flat surface parallel, square or at specified angles to another surface, side wheel 90 degree surfaces, and use angle plates, sine plates, vee blocks and vises to hold a workpiece in position for grinding. Also, use a surface plate and dial indicators for setup work and micrometer height gauges and precision micrometers to check parts and hold tolerances of plus or minus .0002.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 202 Cylindrical Grinder and Tool and Cutter Grinder (N) ..... 3 Cr. Hrs.
The student will identify cylindrical grinder and tool and cutter grinder parts, accessories and explain their functions and be able to set up a workpiece between centers, grind different diameters within .0005 tolerance, sharpen an end mill, sharpen a slap mill and sharpen a straight or staggered tooth side mill.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 205 Tracing Lathe Setups and Operations (N) ..... 3 Cr. Hrs.
The student will identify the tracing lathe parts and note their functions, be able to make a simple template, set the

template and tracing attachment and machine a part within tolerances specified on drawing of plus or minus .002.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 206 Turret Lathe and Automatic Screw Machine (N) . . . . . 3 Cr. Hrs.
The student will identify the turret lathe and auto sprint screw machine parts, accessories and explain their functions, be able to write a setup sheet, set up the auto sprint and turret lathe and produce simple parts within plus or minus .002 tolerances specified on a drawing.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 207 Point to Point Numerical Control (N) . . . . . 3 Cr. Hrs.
The student will be able to write a program for the Moog N.C. Milling Machine, punch the tape on the flexwriter, set the tooling and produce a part which is to be drilled and milled within tolerances of plus or minus .001.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 211-214 Job Shop Machining I, II, III and IV. . . . . 3 Cr. Hrs. each unit
The student will be able to produce machined parts from a shop sketch or drawing, write process sheets, estimate machining time and part costs, and perform final inspection on the finished parts.
Each unit, 20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 216 Grinding Machine Setups and Operations (N) . . . . . 6 Cr. Hrs.
The student will demonstrate an understanding of the principles of grinding wheel selection, be able to do form grinding, sharpen form cutters, sharpen reamers, sharpen milling cutters using the eccentric relief method, and perform surface and cylindrical grinding operations within tolerances of .0001.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

MAS 217 Introduction to Structure of Metals (N) . . . . . 4 Cr. Hrs.
The student will demonstrate an understanding of the effects of induced heat and mechanical working on ferrous and non-ferrous metals, AISI and SAE metal codes, alloying elements and how to determine heat treatment specifications.
60 Hrs. Theory 60 Ct. Hrs.

MAS 218 Introduction to Die Making (N) . . . . . 6 Cr. Hrs.
The student will recognize die terminology and be able to build a simple punch die.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

MAS 219 Machine Maintenance and Repair (N) . . 6 Cr. Hrs.
The student will demonstrate the ability to determine the different types of lubricants used in machine shop equipment and be able to disassemble, clean and deburr, reassemble, and adjust machine slides and gear boxes.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

MAS 220 Scraping Techniques (N) . . . . . 3 Cr. Hrs.
The student will be able to identify the tools used for scraping and explain the technique of scraping a flat surface.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 225 Introduction to Electro Discharge Machining (N) . . . . . 3 Cr. Hrs.
The student will demonstrate an understanding of the principles of electro discharge machining and be able to make electrodes for the minitron E.D.M. and produce various shaped holes in metal.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

MAS 226 Turning Machine Theory. . . . . 3 Cr. Hrs.
The student will demonstrate an understanding or knowledge of the principles of turning machines, their cutting tools and accessories. The machines studied will be engine lathes, turret lathes, screw machines, tracing lathes, and numerical control lathes.
45 Hrs. Theory 45 Ct. Hrs.

MAS 227 Milling Machine Theory. . . . . 3 Cr. Hrs.
The student will demonstrate an understanding or knowledge of the principles of milling machines, their cutting tools and accessories. The machines studied will be vertical, horizontal, bed type, duplex, special and numerical control milling machines.
45 Hrs. Theory 45 Ct. Hrs.

MAS 228 Grinding Machine Theory . . . . . 3 Cr. Hrs.
The student will demonstrate an understanding or knowledge of the principles of grinding machines, grinding machine accessories and grinding wheels. The grinding machines studied will be surface grinders, cylindrical grinders, and tool and cutter grinders.
45 Hrs. Theory 45 Ct. Hrs.

MAS 229 Using Machine Shop Formulas. . . . . 3 Cr. Hrs.
The student will solve machine shop problems using basic machine shop formulas. Types of problems will include tapers, speeds and feeds, figuring angles and hole locations.
45 Hrs. Theory 45 Ct. Hrs.

MAS 230 Machine Shop Measuring Instrument Theory . . . . . 3 Cr. Hrs.
The student will demonstrate an understanding or knowledge of the principles of measuring instruments used in machine shop. How each measuring instrument works and the type of work it is used for in the machining industry will be explained.
45 Hrs. Theory 45 Ct. Hrs.

MAS 235 Blue Print Reading . . . . . 3 Cr. Hrs.
The student will demonstrate the ability to read machine shop drawings. The drawings read will start simple and become more complex as the course progresses. All types of dimensions, notes, symbols, and tolerances will be interpreted. (Prerequisite MAS 105)
45 Hrs. Theory 45 Ct. Hrs.

MAS 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab 105 Ct. Hrs.

MAS 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Machine Shop Program, and is outside the program offering.
90 Hrs. Lab 90 Hr.

MECHANICS

AIRFRAME POWER PLANT (A)
Associate Degree

Students interested in Airframe Power Plant Program may register for these courses at Opportunity School. Upon completion of these courses at Opportunity School, an FAA certificate, and twelve (12) semester hours (consisting of at least 3 semester hours of English and the remainder electives), the student may receive an Associate Degree from Community College of Denver — Auraria Campus in the Airframe Power Plant field. (Opportunity School credits are

quarter hours, when applying for an Associate Degree these quarter credit hours will be computed to Semester hours.)

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
APP 101	Airframe Mechanics I	15	300
APP 102	Airframe Mechanics II	15	300
APP 103	Airframe Mechanics III	15	300
APP 201	Aircraft Power Plant Mechanics I	15	300
APP 202	Aircraft Power Plant Mechanics II	15	300
APP 203	Aircraft Power Plant Mechanics III	15	300
		90	1800

Required Related Courses

English	3	45
Electives	9	135
	12	180
TOTAL REQUIRED HOURS	102	1980

AIRFRAME POWER PLANT (A)

APP 101 Airframe Mechanics I . . . . . 15 Cr. Hrs.
APP 102 Airframe Mechanics II . . . . . 15 Cr. Hrs.
APP 103 Airframe Mechanics III . . . . . 15 Cr. Hrs.
Consists of training in the overhaul and maintenance of various airframes. Includes rigging and assembly, wood, fabric, doping, sheet metal, welding. Federal Aviation Regulations and hydraulic systems. These courses taken in conjunction with the courses in Aircraft Power Plant, prepare a student practically and theoretically to qualify for the Federal Aviation Administration A and P license. It is based on standards required by the FAA and is an FAA approved mechanics school.
300 Contact Hours Each

APP 201 Aircraft Power Plant Mechanics I. . . . . 15 Cr. Hrs.
APP 202 Aircraft Power Plant Mechanics II . . . . 15 Cr. Hrs.
APP 203 Aircraft Power Plant Mechanics III . . . 15 Cr. Hrs.
Consists of training in various aircraft powerplants and components, such as carburetors, ignition systems, propellers, electrical systems and generators, lubrication and fuel systems. These courses, along with the Airframe Mechanics courses, are an approved FAA combined Airfram and Powerplant Mechanics curriculum and they all prepare a student practically and theoretically to qualify for the FAA A and P license.
300 Contact Hours Each

AUTO BODY PAINTING (N)
9-Month Certificate

This program provides the student with job entry skills for the Auto Body painting trades and upgrading for those in the field who need to acquire more skill. The program emphasis is on Auto Body painting.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ABP 100	Orientation on Shop Policy and Auto Body Painting Safety	1	15
ABP 101	Sanding	2	45
ABP 102	Priming	3	60
ABP 103	Painting Acrylic Lacquer	3	60
ABP 104	Spot Painting with Acrylic Lacquer	3	60
ABP 105	Painting with Acrylic Enamel and Enamel	3	60
ABP 111	General Refinishing I	3	60
ABP 112	General Refinishing II	3	60
ABP 113	General Refinishing III	3	60
ABP 114	General Refinishing IV	3	60
ABP 115	General Refinishing V or one of the following: electives, independent study, or cooperative work experience	3	60
		30	600

Additional Major Courses

ABP 297	Cooperative Work Experience	3	105
ABP 299	Independent Study	3	90

ABP 100 Orientation on Shop Policy and Auto Body Painting Safety . . . . . 1 Cr. Hr.
The student will demonstrate an understanding of school policy on safety, parking, shop clean-up and grading procedures, list tools and equipment used in Auto Body Painting, demonstrate their use and care for student safety, perform safe handling of solvents and other flammable liquids and personal safety devices.
10 Hrs. Theory-5 Hrs. Lab 15 Ct. Hrs.

ABP 101 Sanding . . . . . 2 Cr. Hrs.
The student will be able to perform surface preparation, surface sanding, featheredging broken, damaged areas by hand and with power tools.
15 Hrs. Theory-30 Hrs. Lab 45 Ct. Hrs.

ABP 102 Priming . . . . . 3 Cr. Hrs.
The student will be able to mix primers and sealers to paint company specifications, perform all paint gun and air line regulator's adjustments, clean, assemble paint gun, apply primer surfacer for spot and panel repair.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABP 103 Painting with Acrylic Lacquer . . . . . 3 Cr. Hrs.
The student will be able to apply acrylic lacquer color and top coats, list variable temperature changes for thinners and solvents, demonstrate hand and machine compounding.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABP 104 Spot Painting With Acrylic Lacquer . . . . 3 Cr. Hrs.
The student will be able to prepare practice panels for spot painting, perform sanding procedures, apply blending and compounding techniques.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABP 105 Painting With Acrylic Enamel and Enamel . . . . . 3 Cr. Hrs.
The student will be able to apply acrylic enamel, enamel color and topcoats, demonstrate the different techniques in their application, list paint problems, their causes and cures.
20 Hrs. Theory-40 Hrs. Lab. 60 Ct. Hrs.

ABP 111 -114 General Refinishing I, II, III, and IV . . . . . 3 Cr. Hrs. each course
The student will be able to perform all operations from ABP 100 through ABP 105. Using this knowledge they will perform live work under closely related shop and business conditions with emphasis placed upon quality work and flat rate.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABP 115 General Auto Refinishing V . . . . . 3 Cr. Hrs.
The student will be able to perform more refinishing in specific area to overcome deficiencies or provide enrichment or with permission of the instructor — take an elective Independent Study or Cooperative Work Experience.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABP 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

ABP 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Auto Body Service Program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

AUTO BODY SERVICE (N)
Two Year Certificate and/or Associate Degree

This program provides the student with job entry skills for the Auto Body trades and upgrading for those in the field who need to acquire more skill. The program emphasis is on Auto Body repair.

Auto Body Service is structured on a 3 week, 60 contact hour module; however, a great deal of flexibility exists. A full load would be five of the three hour modules offered concurrently.

Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors.

A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty advising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Auto Body student may select the job entry skills he/she wants to develop. The student may certify as having entry level skills in Fiberglass Repair in 6 weeks, Radiator Repair in 6 weeks, Used Car Detailing in 6 weeks, Frame Repair in 3 weeks and/or Glass Installation in 3 weeks as well as the entire two year certificate.

The Auto Body program uses an individualized, self paced, multimedia instructional approach. Faculty lectures and/or small group demonstration is incorporated with hands-on practical laboratory experience.

New students need not wait for the next formal registration as they may be admitted to the Auto Body shop program at any time providing an opening exists.

A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

FIBERGLASS REPAIR
6 Week Certificate

ABS 130	Fiberglass Repair	3	60
ABS 135	Fiberglass Panel Replacement	3	60

RADIATOR REPAIR
6 Week Certificate

ABS 136	Cleaning, Leak Testing, Soldering (Radiator)	3	60
ABS 137	Repair, Recore (Radiator)	3	60

LEADING
3 Week Certificate

ABS 138	Leading	3	60

USED CAR DETAILING
6 Week Certificate

ABS 139	Used Car Detailing — Interior	3	60
ABS 140	Used Car Detailing — Exterior	3	60

FRAME REPAIR
3 Week Certificate

PREREQUISITES ABS 100, ABS 110 & ABS 200

ABS 204	Frame Repair	3	60

GLASS INSTALLATION
3 Week Certificate

ABS 145	Glass Installation	3	60

AUTO BODY SERVICE (N)
Certificate or Associate Degree

This program provides the student with job entry skills for the Auto Body trades and upgrading for those in the field who need to acquire more skill. The program emphasis is on Auto Body repair.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ABS 100	Orientation on Shop Policy and Auto Body Safety	1	15
ABS 105	Remove and Replace Front Sheet Metal	2	45
ABS 106	Remove and Replace Bolt in Body Parts	3	60
ABS 107	Remove and Replace Hardware and Trim	3	60
ABS 108	Metal Repair	3	60
ABS 109	Heat Distortion and Shrinking	3	60
ABS 110	Oxyacetylene Welding for Auto Body	3	60
ABS 115	Patch Weld Repairs Oxyacetylene TIG and MIG Welding	3	60
ABS 116	Use of Plastic Filler	3	60
ABS 117	Pull Rod and Pry Bar Repair	3	60
ABS 118	Minor Dent Repairs	3	60
ABS 200	Body Alignment	3	60
ABS 201	Major Damage Repairs	3	60
ABS 202	Major Damage Repairs	3	60
ABS 203	Major Damage Repairs	3	60
ABS 204	Frame Repair	3	60
ABS 211	General Auto Body Repair I	3	60
ABS 212	General Auto Body Repair II	3	60
ABS 213	General Auto Body Repair III	3	60
ABS 214	General Auto Body Repair IV	3	60
ABS 215	General Auto Body Repair V or one of the following; electives, independent study or cooperative work experience	3	60
		60	1200

Required Related Courses

General Studies Elective	3	45
English Elective	3	45
Math Elective	2	32
Social Science Elective	3	45
	11	167
TOTAL REQUIRED HOURS	71	1367

Additional Major Courses

ABS 130	Fiberglass Repair	3	60
ABS 135	Fiberglass Panel Replacement	3	60
ABS 136	Cleaning, Leak Testing, Soldering (Radiator)	3	60
ABS 137	Repair, Recore (Radiator)	3	60
ABS 138	Leading	3	60
ABS 139	Used Car Detailing-Interior	3	60

ABS 140	Used Car Detailing-Exterior	3	60
ABS 145	Glass Installation	3	60
ABS 297	Cooperative Work Exp.	3	105
ABS 299	Independent Study	3	90

ABS 100 Orientation on Shop Policies and Auto Body Safety . . . . . 1 Cr. Hr.
The student will employ shop policies, safety, parking, shop clean-up, grading procedures, identification, use and care of hand and power tools and equipment, and complete nomenclature of Auto Body parts.
10 Hrs. Theory-5 Hrs. Lab 15 Ct. Hrs.

ABS 105 Remove and Replace Front Sheet Metal . . . . . 2 Cr. Hrs.
The student will practice how to disassemble and reassemble front sheet metal including all brackets, braces, bumpers, radiators, inner pans, fenders, hood, and select the tools to remove and replace any one or all parts within factory specification and required flat rate time.
15 Hrs. Theory-30 Hrs. Lab 45 Ct. Hrs.

ABS 106 Remove and Replace Bolt-on Body Parts . . . . . 3 Cr. Hrs.
The student will practice how to remove and replace, align and adjust all bolt-on body parts including doors, locks, regulators, hinges, trunk lids and select the tools and remove and replace any one or all parts within factory specifications and required flat rate time.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 107 Remove and Replace Hardware, Trim, and Glass . . . . . 3 Cr. Hrs.
The student will practice how to remove and replace and align interior and exterior trim and hardware including moldings, handles, seat tracks, trim panels on doors, quarter, center post and cowl panel; also, remove and replace door, quarter glass, windshields and select the tools to remove and replace any one or all of above parts within factory specifications and required flat rate time.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 108 Metal Repair . . . . . 3 Cr. Hrs.
The student will practice how to remove minor damage from sheet metal using the hammer, dolly blocks, files, and power sanders, and select the tools and rough-out, smooth a minor dent in sheet metal without stretching the metal.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 109 Heat Distortion and Shrinking . . . . . 3 Cr. Hrs.
The student will employ the safety rules and procedures of setting up an oxyacetylene torch, lighting of torch, how to control distortion in metal caused by heat, different methods used in shrinking stretched metal, be able to select the tools and shrink stretched metal.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 110 Oxyacetylene Welding for Auto Body . . . 3 Cr. Hrs.
The student will practice how to oxyacetylene weld all types of joints (butt, lap, corner, T, and flange) in all positions (flat, horizontal, vertical, and overhead) with good penetration and appearance.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 115 Patch Weld Repair — Oxyacetylene TIG and MIG Welding . . . . . 3 Cr. Hrs.
The student will demonstrate an understanding of how to remove damaged area from a panel and patch weld in new metal by using oxyacetylene torch and mild steel welding rod or by spotting metal with mild steel and finishing with a flux coated brass rod. The student should also learn to weld in all positions with a MIG "continuous wire welder" and replace a new patch of metal with penetration and minimum amount of warping.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 116 Use of Plastic Fillers . . . . . 3 Cr. Hrs.
The student will demonstrate the ability to prepare a damaged surface to be filled, the mixture and mixing of plastic body fillers, the application and finishing procedures preparing for primer surfacer.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 117 Pull Rod and Pry Bar Repairs . . . . . 3 Cr. Hrs.
The student will practice use of dent puller, pry bars, and pull rods to repair small dents and creases on double panels and hard-to-get-to areas, and metal finish or fill with body filler.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 118 Minor Dent Repairs . . . . . 3 Cr. Hrs.
The student will demonstrate an understanding of how to repair damaged areas by cutting out and patch welding in new metal, bumping out dent with hammer and dolly, using pry bars, pull rods, dent pullers, the use of all shrinking procedures and finish area by metal finishing or by filling area with a body filler.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 130 Fiberglass Repair . . . . . 3 Cr. Hrs.
The student will identify the different types of material and equipment used in the repair of fiberglass panels, note the different grades of fiberglass matting, powders and hardening agents used in the repair of fiberglass panels. He/she will demonstrate how to mix poly resins and catalyst for repairing and patching of broken fibers on fiberglass boats or cars, using methods to acquire strength and appearance.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 135 Fiberglass Panel Replacement . . . . . 3 Cr. Hrs.
A student will identify the different panels or section of panels that are used and demonstrate how to reinforce spliced areas for strength and safety and select the tools and material to replace or section a panel.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 136 Cleaning, Leak Testing, Soldering Radiators . . . . . 3 Cr. Hrs.
The student will use all the safety factors of working with overheated radiators and the caustics used in cleaning a radiator. They will demonstrate the technique in cleaning a radiator both inside and out, test for leaks, and will solder the leak and test their repair.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 137 Repair, Recore Radiators . . . . . 3 Cr. Hrs.
The student will select the tools and demonstrate how to straighten fins of a radiator; how to repair leaks, section or recore a radiator, repair upper and lower tanks, boilout, rodout, back flush and repair or replace damaged areas using all safety precaution.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 138 Leading . . . . . 3 Cr. Hrs.
The student will select the tools and material used in leading, to employ safety practices, demonstrate how to prepare a surface, apply tinning compound or acid and apply lead in all positions (flat, horizontal, vertical, and ovverhead), forming, shaping, and smoothing area for refinishing.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 139 Used Car Detailing - Interior . . . . . 3 Cr. Hrs.
The student will demonstrate the ability to select the tools and materials and perform cleaning and refinishing engine and luggage compartments, engine, upholstery, rugs, glass and interior trim making the car presentable for resale.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 140 Used Car Detailing - Exterior . . . . . 3 Cr. Hrs.
The student will demonstrate the ability to select the tools and material and perform cleaning and polishing chrome, glass, vinyl tops, tires, and painted areas making car presentable for resale.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 145 Glass Installation . . . . . 3 Cr. Hrs.
The students will demonstrate the ability to select tools and material and perform removing and replacing necessary trim.

stationary and movable glass, both glue in and gasket held and test for leaks.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 200 Body Alignment . . . . . 3 Cr. Hrs.
The student will identify damaged area and be able to align auto bodies, use hydraulic jacks, tram gauge, alignment equipment, read and use measuring devices.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 201-203 Major Damage Repair . . . . . 3 Cr. Hrs each unit
The student will be able to perform repairs on auto bodies, align auto bodies, repair and align sheet metal with the use of different types of equipment, gauges and measuring devices.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs. (each)

ABS 204 Frame Repair . . . . . 3 Cr. Hrs.
The student will demonstrate their ability to select the hookups using portable rail and power post to straighten and align frames on conventional and unitized type construction to manufacturer's specifications.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 211-214 General Auto Body Repair I, II, III, IV. . . . . 3 Cr. Hrs. Each Unit
The student will be able to use all types of equipment necessary to do repairs on various types auto bodies with emphasis on speed and quality work.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs. (Each)

ABS 215 General Auto Body Repair . . . . . 3 Cr. Hrs.
The student will be able to perform more general auto body repair in a specific area to overcome deficiency or provide enrichment, or with permission of the instructor, taken an elective, cooperative work experience, or an approved independent study.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

ABS 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory-90 Hrs. Lab 105 Ct. Hrs.

ABS 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Auto Body Service Program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

AUTOMOTIVE MECHANICS (N)
Two-year Certificate and/or Associate Degree

This program provides the student with job entry skills for the automotive trade and upgrading for those in the field who need to acquire more skill.

Auto Mechanics is structured on a 3 week, 60 contact hour module with each 60 hour module being offered in sequence. A full load would be five (5) of the 60 hour modules.

Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors. New students need not wait for the next formal registration as they may be admitted to the Auto Mechanics Program at the beginning of any of the three week class providing an opening exists.

A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty advising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Auto Mechanics student may select the job entry skills he/she wants to develop. The student may certify as having entry level skills in Tune-up & Emission Controls in 15 weeks, in Brakes in six weeks, in Automatic Transmissions in six weeks, Wheel Alignment & Suspensions in 15 weeks, Air Conditioning in three weeks, and/or Four Wheel Drive in six weeks as well as the entire two year certificate.

The Auto Mechanics Program uses an individualized, self paced, multi-media instructional approach. Faculty lectures and/or small group demonstration is incorporated with hands-on practical laboratory experience.

TUNE-UP AND EMISSION CONTROLS
15 WK Certificate

		Cr. Hrs.	Ct. Hrs.
AUM 105	Basic Electricity and Ignition Systems	3	60
AUM 106	Starting and Charging Systems	3	60
AUM 107	Carburetor Service	3	60
AUM 108	Oscilloscopes and Electronic Testing	3	60
AUM 109	Emission Control and Dynamometer	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

DRUM AND DISC BRAKES
6 WK Certificate

AUM 115	Drum Brake Systems	3	60
AUM 116	Disc Brake Systems	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

AUTOMATIC TRANSMISSIONS
9 WK Certificate

AUM 207	Automatic Transmissions, Theory, and Maintenance	3	60
AUM 208	Automatic Transmission Rebuild	6	120

CHECK WITH ADVISOR FOR PREREQUISITES

WHEEL ALIGNMENT AND SUSPENSIONS
9 WK Certificate

AUM 117	Wheel Alignment	3	60
AUM 118	Wheel Balance and Suspension	3	60
AUM 119	Manual and Power Steering Gears	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

AIR CONDITIONING
3 WK Certificate

AUM 217	Air Conditioning Theory, Service, and Safety	3	60

TWO YEAR CERTIFICATE and/or ASSOCIATE DEGREE
Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
AUM 105	Basic Electricity and Ignition Systems	5.3	60

AUM 106	Starting and Charging Systems	3	60
AUM 107	Carburetor Service	3	60
AUM 108	Oscilloscopes and Electronic Testing	3	60
AUM 109	Emission Control and Dynamometer	3	60
AUM 115	Drum Brake Systems	3	60
AUM 116	Disc Brake Systems	3	60
AUM 117	Wheel Alignment	3	60
AUM 118	Wheel Balance and Suspension	3	60
AUM 119	Manual and Power Steering Gears	3	60
AUM 205	Clutches and Manual Transmissions		
AUM 206	Drive Lines and Differentials	3	60
AUM 207	Automatic Transmissions, Theory, and Maintenance	3	60
AUM 208	Automatic Transmission Rebuild	6	120
AUM 215	Engine Operation, Diagnosis, Disassembly, and Measurement	6	120
AUM 216	Engine Recondition and Assembly	3	60
AUM 217	Air Conditioning Theory, Service, and Safety	3	60
AUM 218	General Service Repair or one of the following: Elective, Cooperative Work Experience, or Independent Study	3	60
	Required Related Courses		
	General Studies Elective	3	45
	English Elective	3	45
	Math Elective	2	32
	Social Science Elective	3	45
		11	167
	TOTAL REQUIRED HOURS	71	1367
	Additional Major Courses		
AUM 120	Auto Mechanics for Mechanical Trades (R)	3	60
AUM 219	Customer Service	6	120
AUM 220	Four Wheel Front Drive and Transfer Cases	6	120
AUM 297	Cooperative Work Experience	3	105
AUM 299	Independent Study	3	90

AUTO MECHANICS COURSE DESCRIPTIONS

AUM 105 Basic Electricity and Ignition Systems (N,R) . . . . . 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this course, the student should be able to understand the basic concepts of electricity, use volt, amp, and ohm meters. The student will demonstrate his ability to measure amp, ohms, and voltage. The student will learn how the conventional and solid state ignition systems operate. The student will demonstrate how to test all types of ignition systems for malfuntions and make proper repairs. This knowledge will be evidenced by demonstrations and a series of unit tests.
20 Hrs. Theory - 40 Hrs. Lb. 60 Ct. Hrs.

AUM 106 Starting and Charging Systems (N,R) . . . . . 3 Cr. Hrs
60 Clock Hours 3 Semester Credits
After completion of this course, the student should understand the theory of charging systems and voltage regulators. The student will demonstrate how to test for malfunctioning components and to repair or replace the damaged parts as needed. The student should be able to test, remove, and repair starters or domestic automobiles. This knowledge will be evidenced through demonstrations and unit tests.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

AUM 107 Carburetor Service (N,R) . . . . . 3 Cr. Hrs.
60 Clock Hour 3 Semester Credits
After completion of this course, the student should understand the theory of operation of fuel systems. The student should be able to demonstrate his ability to determine carburetor malfunctions and rebuild and make proper adjustments on one, two, and four barrel carburetors. This knowledge will be presented with unit tests and demonstrations.
20 Hrs. Theory - 40 Hrs. Lab 60 Ct. Hrs.

AUM 108 Oscilloscope and Electronic Testing(N,R) . . . . . 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this course, the student should understand how to operate all components on the oscilloscope and make proper tests using the electronic instruments. The student should learn how to hook up the oscilloscope to an automobile and be able to interpret malfunctions that appear on the screen. This knowledge will be demonstrated through unit tests and demonstrations of the performance abilities by properly operating the electronic test instruments.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs

AUM 109 Emission Control & Dynamometer (N,R). . . . . 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this course, the student should understand the theory of operation of emission control components used on domestic automobiles. The student will demonstrate how to locate malfunctioning components and how to make proper replacements or repairs. The student will demonstrate how to replace an automobile on the dynamometer and make proper horsepower and torque tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.
Unit test and on the car testing will be conducted to evaluate the student's ability on emission control malfunctions.
The dynanometer portion of this course will be eliminated on the Red Rocks Campus.

AUM 115 Drum Brake Systems (N) . . . . . 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits

After completion of this course, the student should be able to explain hydraulic principles, brake operation, and identify brake parts and define terms associated with brake systems. The student should demonstrate the ability to replace shoe and lining assemblies, recondition wheel cylinders and master cylinders, and properly bleed a brake system. This knowledge will be evidenced by demonstration and a series of unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 116 Disc Brake Systems (N) 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completing this course, the student should be able to describe the purpose and operation of disc brakes, identify parts and define terms associated with disc brake systems.

The student should demonstrate the ability to remove and replace and overhaul a caliper assembly; replace brake pads, and properly bleed a disc brake system. This knowledge will be evaluated by demonstration and a series of unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 117 Wheel Alignment (N)..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this course, the student should be able to explain the principles and purpose of wheel alignment, and the various methods of adjustments. The student should demonstrate the ability to align an automotive front system, identify the parts, and define terms associated with wheel alignment. This knowledge will be evidenced by demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 118 Wheel Balance and Suspension (N)..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this course, the student should be able to explain the theory and purpose of wheel balance and suspensions systems. The student should demonstrate the ability to balance wheels, replace suspension parts, and identify parts and define terms associated with wheel balance and suspension systems. This knowledge will be evidenced by demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 119 Manual and Power Steering Gears (N).. 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this unit, the student should be able to identify the components and explain the purpose of the drive line and universal joints correctly, repair and replace. Also be able to explain the purpose of the differential, identify the different types; remove, check, disassemble, reassemble, adjust, and replace a standard differential assembly. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 205 Clutches & Manual Transmission (N,R) . 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this unit, the student should be able to describe the construction and operation of the clutch assembly. The student should demonstrate the ability to remove, inspect, and correctly replace a clutch assembly. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 206 Drive Lines and Differentials (N,R)..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this unit, the student should be able to identify the components and explain the purpose of the drive line and universal joints correctly, repair and replace. Also be able to explain the purpose of the differential, identify the different types; remove, check, disassemble, reassemble, adjust, and replace a standard differential assembly. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 207 Automatic Transmissions, Theory and Maintenance (N,R)..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits

After completion of this unit, the student should be able to write the purpose of an automatic transmission, identify the component parts and relate the function of each part. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab. 60 Ct. Hrs.

AUM 208 Automatic Transmission Rebuild (N,R) ..... 6 Cr. Hrs.
120 Clock Hours 6 Semester Credits
After completion of this unit, the student should be able to perform the checks, tests, and operations associated with transmission service. Also remove and install and overhaul an automatic transmission. This knowledge will be evidenced through performance and unit tests.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 215 Engine Operation, Diagnosis, Disassembly, and Measurement (N,R).. 6 Cr. Hrs.
120 Clock Hours 6 Semester Credits
After completion of this unit, the student should be able to describe and explain the operation of an automobile engine and the function of components. Also explain overhaul procedures, disassembly and measurement of engine parts with precision tools. To define terms and procedures associated with overhaul of cylinder heads and block assemblies. This knowledge will be evidenced through demonstration and unit tests.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 216 Engine Recondition and Assembly (N,R) ..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this unit, the student should be able to explain overhaul and assembly procedures; identify the components and understand current assembly procedures. Also, time and make final adjustments to the engine. This knowledge will be evidenced by shop performance and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 217 Air Conditioning, Theory, Service and Safety (N,R)..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
After completion of this unit, the student should be able to list the principles of air conditioning and to define related terms; to identify the components of a basic air conditioning unit and to match the function to the component; to identify tools and special equipment used for air conditioning service. Also to perform minor repairs, to discharge, evacuate, leaktest and charge a basic unit. This knowledge will be evidenced through performance and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 218 General Service Repair (N,R)..... 3 Cr. Hrs.
60 Clock Hours 3 Semester Credits
This unit is designed for live work on automobiles and any work in which the student needs to complete the program. It may include any live work that fits the instructional program in which the student has had experience.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 219 Customer Service (N,R) ..... 6 Cr. Hrs.
120 Clock Hours 6 Semester Credit Hours
A unit designed for the student to do live work in which he may be deficient in some phase of service repair he may want to specialize. This may be done on an hours arranged basis with permission of the instructor or instructors involved.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 220 Four Wheel Drive and Transfer Cases (N) ..... 3 Cr. Hrs.
120 Clock Hours 6 Semester Hours

This course is in lieu of 6 credits in the regular program for the student to learn four-wheel drive vehicles. After completion of this unit, the student should be able to describe the theory, construction, and operation of four-wheel drives. The student should demonstrate his ability to service, adjust and overhaul four-wheel drive units. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 297 Cooperative Work Experience (N,R) . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

AUM 299 Independent Study (N,R) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Automotive Mechanics Program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

AUTOMOTIVE MECHANICS (R)
Certificate or Associate Degree

This program provides the student with job entry skills for the automotive trade and upgrading for those in the field who need to acquire more skill.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
AUM 105	Basic Electricity & Ignition Systems	3	60
AUM 106	Starting and Charging Systems	3	60
AUM 107	Carburetor Service	3	60
AUM 108	Oscilloscopes and Electronic Testing	3	60
AUM 109	Emission Control & Dynamometer	3	60
AUM 125	Drum and Disc Brake Systems	6	120
AUM 126	Wheel Alignment, Balance and Suspension	6	120
AUM 127	Steering Gears & Systems	3	60
AUM 205	Clutches and Manual Transmissions	3	60
AUM 206	Drive Lines and Differentials	3	60
AUM 207	Automatic Transmissions, Theory, and Maintenance	3	60
AUM 208	Automatic Transmission Rebuild	6	120
AUM 215	Engine Operation, Diagnosis, Disassembly, and Measurement	6	120
AUM 216	Engine Recondition and Assembly	3	60
AUM 217	Air Conditioning Theory, Service, and Safety	3	60
AUM 218	General Service Repair or one of the following: Elective, Cooperative Work Experience, or Independent Study	3	60
		60	1200

Required Related Courses

	English Elective	3	45
	Math Elective	3	45
	Social Science Elective	3	45
	Elective	3	45
		12	180
	TOTAL REQUIRED HOURS	72	1380

Additional Major Courses

AUM 120	Auto Mechanics for Mechanical Trades (R)	3	60
AUM 219	Customer Service	6	120
AUM 225	Advanced Automatic Transmission (R)	7	140
AUM 297	Cooperative Work Experience	3	105
AUM 299	Independent Study	3	90

AUM 105 Basic Electricity and Ignition Systems (N,R) . . . . . 3 Cr. Hrs.
After completion of this course, the student should be able to understand the basic concepts of electricity, use volt, amp, and ohms, and voltage. The student will learn how the conventional and solid state ignition systems operate. The student will demonstrate how to test all types of ignition systems for malfunctions and make proper repairs. This knowledge will be evidenced by demonstrations and a series of unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 106 Starting and Charging Systems (N, R) . . . . . 3 Cr. Hrs.
After completion of this course, the student should understand the theory of charging systems and voltage regulators. The student will demonstrate how to test for malfunctioning components and to repair or replace the damaged parts as needed. The student should be able to test, remove, and repair starters on domestic automobiles. This knowledge will be evidenced through demonstrations and unit tests.
20 Hrs. Theory - 40 Hrs. Lab 60 Ct. Hrs.

AUM 107 Carburetor Service (N,R) . . . . . 3 Cr. Hrs.
After completion of this course, the student should understand the theory of operation of fuel systems. The student should be able to demonstrate his ability to determine carburetor malfunctions and rebuild and make proper adjustments on one, two, and four barrel carburetors. This knowledge will be presented with unit tests and demonstrations.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 108 Oscilloscope and Electronic Testing (N,R) . . . . . 3 Cr. Hrs.
After completion of this course, the student should understand how to operate all components on the oscilloscope and make proper tests using the electronic instruments. The student should learn how to hook up the oscilloscope to an automobile and be able to interpret malfunctions that appear on the screen. This knowledge will be demonstrated through unit tests and demonstrations of the performance abilities by properly operating the electronic test instruments.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 109 Emission Control & Dynamometer (N,R) . . . . . 3 Cr. Hrs.
After completion of this course, the student should understand the theory of operation of emission control components used on domestic automobiles. The student will demonstrate how to locate malfunctioning components and how to make proper replacements or repairs. The student will demonstrate how to replace an automobile on the dynamometer and make proper horsepower and torque tests. Unit test and on the car testing will be conducted to evaluate the student's ability on emission control malfunctions. The dynamometer portion of this course will be eliminated on the Red Rocks Campus.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 120 Auto Mechanics for Mechanical Trades (R) . . . . . 3 Cr. Hrs.
Orientation to the field of auto mechanics. General principles, initial techniques and skill development, and how auto mechanics relates to the various trades.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

AUM 125 Drum and Disc Brake Systems (R) . . . . . 6 Cr. Hrs.
After completion of this course, the student will be able to explain hydraulic principles, brake operation, and identify brake parts and define terms associated with brake systems.
30 Hrs. Theory-90 Hrs. Lab 120 Ct. Hrs.

AUM 126 Wheel Alignment, Balance, and Suspension (R) . . . . . 6 Cr. Hrs.
After the completion of this course, the student will be able to explain the principles and purpose of wheel alignment and suspension, and the various methods of adjustments, and to explain the theory and purpose of wheel balance and suspension systems.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 127 Steering Gears and Systems (R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student will be able to identify the components and explain the purpose of manual and power steering gears. The student will demonstrate the ability to make all required adjustments and trouble-shoot the system accurately, and be able to remove, disassemble, re-assemble, adjust & replace re-circulating ball type steering gears.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 205 Clutches & Manual Transmission (N,R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student should be able to describe the construction and operation of the clutch assembly. The student should demonstrate the ability to remove, inspect, and correctly replace a clutch assembly. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 206 Drive Lines and Differentials (N,R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student should be able to identify the components and explain the purpose of the drive line and universal joints correctly, repair and replace. Also be able to explain the purpose of the differential, identify the different types; remove, check, disassemble, re-assemble, adjust, and replace a standard differential assembly. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 207 Automatic Transmissions, Theory and Maintenance (N,R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student should be able to write the purpose of an automatic transmission, identify the component parts and relate the function of each part. This knowledge will be evidenced through demonstration and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 208 Automatic Transmission Rebuid (N,R) . . . . . 6 Cr. Hrs.
After completion of this unit, the student should be able to perform the checks, tests, and operations associated with transmission service. Also remove and install and overhaul an automatic transmission. This knowledge will be evidenced through performance and unit tests.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 215 Engine Operation, Diagnosis, Disassembly, and Measurement (N,R) . . . . . 6 Cr. Hrs.
After completion of this unit, the student should be able to describe and explain the operation of an automobile engine and the function of components. Also explain overhaul procedures, disassembly and measurement of engine parts with precision tools. To define terms and procedures associated with overhaul of cylinder heads and block assemblies. This knowledge will be evidenced through demonstration and unit tests.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 216 Engine Recondition and Assembly (N,R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student should be able to explain overhaul and assembly procedures; identify the components and understand correct assembly procedures. Also, time and make final adjustments to the engine. This knowledge will be evidenced by shop performance and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 217 Air Conditioning, Theory, Service and Safety (N,R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student should be able to list the principles of air conditioning and to define related terms; to identify the components of a basic air conditioning unit and to match the function to the component; to identify tools and special equipment used for air conditioning service. Also to perform minor repairs, to discharge, evacuate, leaktest and charge a basic unit. This knowledge will be evidenced through performance and unit tests.
20 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 218 General Service Repair (N,R) . . . . . 3 Cr. Hrs.
This unit is designed for live work on automobiles and any work in which the student needs to complete the program. It may include any live work that fits the instructional program in which the student has had experience.
30 Hrs. Theory-40 Hrs. Lab 60 Ct. Hrs.

AUM 219 Customer Service (N,R) . . . . . 6 Cr. Hrs.
A unit designed for the student to do live work in which he may be deficient in some phase of service repair he may want to to specialize. This may be done on an hours arranged basis with permission of the instructor or instructors involved.
40 Hrs. Theory-80 Hrs. Lab 120 Ct. Hrs.

AUM 225 Advanced Automatic Transmission (R) . . . . . 7 Cr. Hrs.
In this unit, the student will have advanced study diagnosing, removing, reconditioning, and replacing automatic transmission.
35 Hrs. Theory-105 Hrs. Lab 140 Ct. Hrs.

AUM 297 Cooperative Work Experience (N) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab 105 Ct. Hrs.

AUM 299 Independent Study (N) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Automotive Mechanics Program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

BUSINESS MACHINE TECHNOLOGY (A)
Associate Degree

This program is designed to prepare the student for proficiency in the skills necessary for maintaining, troubleshooting, and repairing a specific range of modern business machines.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
BMT 100	IBM C & D Electric Typewriter	3	60
BMT 105	IBM C & D Operation and Adjustment Theory	3	60

BMT 106	IBM C & D Disassembly and Reassembly	3	60
BMT 107	Adler "21" and Royal "970" Electric Typewriters	3	60
BMT 108	Adler "21" and Royal "970" Operation and Adjustment Theory	3	60
BMT 109	Adler "21" and Royal "970" Disassembly and Reassembly	3	60
BMT 110	IBM "Selectric" Electric Typewriter	3	60
BMT 115	IBM "Selectric" Operation and Adjustment Theory	3	60
BMT 116	IBM "Selectric" Disassembly and Reassembly	3	60
BMT 117	Troubleshooting Procedures and Customer Relations	3	60
BMT 201	Spirit Duplicators I	3	60
BMT 202	Spirit Duplicators II	3	60
BMT 205	Electric Adders	3	60
BMT 206	Center Section	3	60
BMT 207	Basic Electronic Theory	3	60
BMT 208	Printing Head	3	60
BMT 209	Schematic-Oscilloscope and VOM	3	60
BMT 210	Digital and Logic Theory	3	60
BMT 215	Operation and Troubleshooting Theory	3	60
BMT 216	Mechanical Parts of Electronic Calculator	3	60
		60	1200
	Required Related Courses		
	English Elective	3	45
	Economics Elective	3	45
	Psychology Elective	3	45
		9	135
	TOTAL REQUIRED HOURS	69	1335

BUSINESS MACHINE TECHNOLOGY (A)

BMT 100 IBM C & D Electric Typewriter . . . . . 3 Cr. Hrs.
This course is designed to provide the student with proper classroom/lab safety and operational procedures; electrical and mechanical principles, and specific locations of all internal mechanisms of the IBM C & D Models.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 105 IBM C & D Operation and Adjustment Theory . . . . . 3 Cr. Hrs.
This course is designed to provide the student with the operational and adjustment theories of each internal mechanism of the IBM C & D Models.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 106 IBM C & D Disassembly and Reassembly . . . . . 3 Cr. Hr.s
This course is designed to provide the student with the proper disassembly and reassembly procedures for key internal mechanisms of the IBM C & D Models.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 107 Adler "21" and Royal "970" Electric Typewriters . . . . . 3 Cr. Hrs.
This course is designed to provide the student with electrical and mechanical principles, specific locations of all internal mechanisms of the Adler "21" and Royal "970", and a relevant working knowledge of the metric system of distance measurement.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 108 Adler "21" and Royal "970" Operation and Adjustment Theory. . . . . 3 Cr. Hrs.
This course is designed to provide the student with the operational and adjustment theories of each internal mechanism of the Adler "21" and Royal "970."
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 109 Adler "21" and Royal "970" Disassembly and Reassembly . . . . . 3 Cr. Hrs.
This course is designed to provide the student with the proper disassembly and reassembly procedures for key internal mechanisms of the Adler "21" and Royal "970."
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 100 IBM "Selectric" Electric Typewriter . . . 3 Cr. Hrs.
This course is designed to provide the student with electrical and mechanical principles and specific locations of all internal mechanisms of the IBM "Selectric."
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 115 IBM "Selectric" Operation and Adjustment Theory . . . . . 3 Cr. Hrs.
This course is designed to provide the student with the operational and adjustment theories of each internal mechanism of the IBM "Selectric."
24 Hrs. Theory - 36 HRs. Lab 60 Ct. Hrs.

BMT 116 IBM "Selectric" Disassembly and Reassembly . . . . . 3 Cr. Hrs.
This course is designed to provide the student with proper disassembly and reassembly procedures for key internal mechanisms of the IBM "Selectric."
24 Hrs. Theory - 36 Hrs. Lab. 60 Ct. Hrs.

BMT 117 Troubleshooting Procedures and Customer Relations. . . . . 3 Cr. Hrs.
This course is designed to provide the student with proper troubleshooting techniques and practice as well as proper attitudes to display while in customer's offices.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 201 Spirit Duplicators I . . . . . 3 Cr. Hrs.
Disassembly and reassembly of all mechanisms of Spirit Duplicators, using factory adjustments.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 202 Spirit Duplicators II . . . . . 3 Cr. Hrs.
Troubleshooting theory, preventive maintenance and familiarizes the students with part catalogs, parts' numbers and how to order parts.
24 HRs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 205 Electric Adders . . . . . 3 Cr. Hrs.
Disassembly and reassembly of specific mechanisms, using factory adjustments; mechanical terminology of adding machine, parts and their operations.
24 HRs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 206 Center Section . . . . . 3 Cr. Hrs.
Disassembly and reassembly of center section timing and adjustments; following proper sequence and using factory adjustments.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 207 Basic Electronic Theory . . . . . 3 Cr. Hrs.
Basic electronic theory and familiarizes the student with field effect transistors.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 208 Printing Head . . . . . 3 Cr. Hrs.
Printing head and timing of electronic calculators.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 209 Schematic-Oscilloscope and VOM . . . . . 3 Cr. Hrs.
Schematic reading and use of oscilloscope and Vom as it pertains to office machine field.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 210 Digital and Logic Theory . . . . . 3 Cr. Hrs.
Study and understanding of how digital display works, how the logic board(s) take part in the digital display.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 215 Operation and Troubleshooting Theory . . . . . 3 Cr. Hrs.
Understanding and troubleshooting the logic board(s).
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

BMT 216 Mechanical Parts of Electronic Calculator . . . . . 3 Cr. Hrs.
Studying how the paper and the ribbon are mechanically operated.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

DIESEL POWER-HEAVY EQUIPMENT (R) & TRUCK MECHANICS

This program is designed to train individuals for entry into the Diesel Power or Heavy Duty Mechanic field. In addition, courses are offered for job refreshing or upgrading.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DPE 100	Safety, Tools, Bolts Bearings, Gaskets & Seals	3	60
DPE 105	Introduction to Engines & Fuel Systems	3	60
DPE 106	Four Cycle Engine Overhaul	3	60
DPE 107	Engine Subassembly	3	60
DPE 108	Two Cycle Engine Overhaul	3	60
DPE 109	Clutches	3	60
DPE 110	Manual Transmissions	6	120
DPE 115	Power Shift Transmissions	6	120
DPE 200	Differentials & Final Drives	3	60
DPE 205	Brake Systems	3	60
DPE 206	Heavy Equipment Steering Systems	3	60
DPE 207	Heavy Equipment Chassis	6	120
DPE 208	Truck Chassis, Suspension and Steering Systems	6	120
DPE 209	Electrical Trouble Shooting	3	60
DPE 210	Practical Shop Experience	6	120
		60	1200

Required Related Courses

FLP 100	Safety — Introduction & Orientation	3	60
	English Elective	3	45
	Math Elective	3	45
	Social Science Elective	3	45
	Elective	3	45
		15	240
	Total Required Hours	75	1440

Additional Major Courses

DPE 215	Advanced Engine Study Caterpillar	3	60
DPE 216	Advanced Engine Study Cummins	3	60
DPE 217	Advanced Engine Study Detroit Diesel	4	80
DPE 218	Advanced Engine Study Allis Chalmers	3	60
DPE 219	Advanced Fuel Systems Cummins	3	60
DPE 220	Advanced Fuel Systems Roosamaster	3	60
DPE 225	Advanced Fuel Systems Caterpillar	3	60
DPE 226	Advanced Fuel Systems American Bosch	3	60
DPE 227	Advanced Fuel Systems Robert Bosch	2	40
DPE 228	Advanced Fuel Systems Detroit	1	20
DPE 229	Advanced Trouble Shooting and Tune-up	7	140
DPE 297	Cooperative Work Experience	2-9	60-375
DPE 299	Independent Study	3	90

DIESEL POWER — HEAVY EQUIPMENT & TRUCK MECHANICS (R)

DPE 100 Safety, Tools, Bearings, Gaskets & Seals . . . . . 3 Cr. Hrs.
The study of shop and trade safety, the proper use of hand tools, tensile strength and grades of nuts and bolts, features and design of various types of bearings, and load ratings, and types of seals and gaskets.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 105 Introduction to Engines . . . . . 3 Cr. Hrs.
An introduction study of the fundamentals of 4 cycle and 2 cycle engines, and the different systems and their functions.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 106 Four Cycle Engine Overhaul. . . . . 3 Cr. Hrs.
Step by step procedure for disassembling the 4 cycle engine and reassembling, tune up with dynometer test run and trouble shooting.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 107 Engine Subassemblies . . . . . 3 Cr. Hrs.
Complete study of rebuilding subassemblies, functions, measurements and procedures, including blowers and turbo chargers.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 108 Two Cycle Engine Overhaul . . . . . 3 Cr. Hrs.
Step by step procedure for disassembling the two cycle engine, and reassembling tune up, dynometer test run and trouble shooting.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 109 Clutches . . . . . 3 Cr. Hrs.
Types and sizes of clutches and bell housings used in heavy equipment and trucks, drive lines and universal joints.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 110 Manual Transmissions . . . . . 6 Cr. Hrs.
Theory of designs, gears and gear ratios; disassemble and rebuild transmissions.
30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

DPE 115 Power Shift Transmissions. . . . . 6 Cr. Hrs.
Power shift transmissions used in trucks and heavy equipment; theory, operation and rebuilding; principles and operation of torque converters and fluid couplings.

30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

DPE 200 Differentials & Final Drives . . . . . 3 Cr. Hrs.
Purpose, theory and operation of differentials and final drives as used in trucks and heavy equipment. Includes overhaul and adjusting.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 205 Brake Systems . . . . . 3 Cr. Hrs.
Terminology, components, principles of operation disassembly, rebuild and assembly of air brakes, Jacob brakes and fluid retarders.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 206 Heavy Equipment Steering System . . . . . 3 Cr. Hrs.
Theory of steering on crawler tractors, scrapers and articulating loaders, trouble shooting, repairing and adjusting procedures.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 207 Heavy Equipment Chassis and Track . . . . . 6 Cr. Hrs.
Terminology and components of chassis and suspension system on heavy equipment, track types and their use, roller maintenance and repair procedures.
30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

DPE 208 Truck Chassis, Suspension & Steering Systems . . . . . 6 Cr. Hrs.
Types of suspensions used by truck manufactures components and principles of operation, maintenance and repair of chassis and steering.
30 Hrs. Theory — 90 Hrs. Lab 120 Ct. Hrs.

DPE 209 Electrical Trouble Shooting . . . . . 3 Cr. Hrs.
Starting, charging system and lighting used with the lead acid battery in trucks and heavy equipment.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 210 Practical Shop Experience . . . . . 6 Cr. Hrs.
Hands on shop work pertaining to all modules given in the diesel course.
120 Hrs. Lab. 120 Ct. Hrs.

DPE 215 Advanced Engine Study Caterpillar . . . . . 3 Cr. Hrs.
The study and tuneup of caterpillar engines, dealing with the systems and subassemblies unique to the manufacturers design.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 216 Advanced Engine Study Cummins. . . . . 3 Cr. Hrs.
The study and tuneup of Cummins engines, dealing with the systems and subassemblies unique to the manufacturers design.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 217 Advanced Engine Study Detroit Diesel . . . . . 4 Cr. Hrs.
The study and tuneup of Detroit Diesel engines dealing with the systems and subassemblies unique to the manufacturers design.
20 Hrs. Theory — 60 Hrs. Lab 80 Ct. Hrs.

DPE 218 Advanced Engine Study Allis Chalmers. . . . . 3 Cr. Hrs.
The study and tuneup of Allis Chalmers engines dealing with the systems and subassemblies unique to the manufacturers design.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 219 Advanced Fuel Systems Cummins. . . . . 3 Cr. Hrs.
Cummins fuel pumps and injectors theory, disassembly, reassembly and calibration.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 220 Advanced Fuel Systems Roosamaster . . . . . 3 Cr. Hrs.
Roosamaster pump and pencil nozzels theory, disassembly, reassembly and calibration.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 225 Advanced Fuel Systems Caterpillar . . . . . 3 Cr. Hrs.
Caterpillar pumps, nozzels and precombustion chambers. Theory, disassembly and reassembly and calibration.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 226 Advanced Fuel Systems American Bosch . . . . . 3 Cr. Hrs.
American Bosch pumps and nozzels theory, disassembly, reassembly and calibration.
15 Hrs. Theory — 45 Hrs. Lab 60 Ct. Hrs.

DPE 227 Advanced Fuel Systems Robert Bosch . . . . . 2 Cr. Hrs.
Robert Bosch pumps. Theory disassembly, reassembly and calibration.
12 Hrs. Theory — 28 Hrs. Lab 40 Ct. Hrs.

DPE 228 Advanced Fuel Systems Detroit . . . . . 1 Cr. Hr.
Detroit Diesel pump and injectors. Theory, disassembly and reassembly testing and calibrating injectors on stand.
10 Hrs. Theory — 10 Hrs. Lab 20 Ct. Hrs.

DPE 229 Advanced Trouble Shooting and Tune Up . . . . . 7 Cr. Hrs.
Advanced trouble shooting techniques used in industry on diesel powered equipment.
35 Hrs. Theory — 105 Hrs. Lab 140 Ct. Hrs.

DPE 297 Cooperative Work Experience. . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory — 45-360 Hrs. Lab 60-375 Ct. Hrs.

DPE 299 Independent Study . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Diesel Program and outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

FLUID POWER (R)

Certificate or Associate Degree

The Fluid Power Program is designed to prepare students to enter the field as a hydraulic and/or pneumatic mechanic in an overhaul and repair shop for industrial equipment, and to provide job upgrading or refresher courses for people already employed in the field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
FLP 100	Safety — Introduction & Orientation	3	60
FLP 105	Basic Principles Of Hydraulics	3	60
FLP 106	Fluids For Hydraulics, Sealing Devices	3	60
FLP 107	Source Of Hydraulic Power	3	60

FLP 108	Control Of Hydraulic Power	3	60
FLP 109	Hydraulic Actuators — Motors — Cylinders	3	60
FLP 110	Distribution Of Hydraulic Power	3	60
FLP 115	Conditioning Power Fluids	3	60
FLP 116	Pump, Overhaul & Testing	3	60
FLP 117	Components, Overhaul & Testing	3	60
FLP 200	Basic Pneumatics — Safety	3	60
FLP 205	Compressors	3	60
FLP 206	Primary, Secondary Air Treatment	3	60
FLP 207	Control Valves	3	60
FLP 208	Cylinders, Motors, Pneumatics	3	60
FLP 209	Piping, Hose, Fitting, Pneumatic Systems	3	60
FLP 210	Relief Valves, Pneumatic Systems	3	60
FLP 215	Pneumatic Logic Controls	3	60
FLP 216	Troubleshooting, Print Reading	3	60
FLP 217	Basic Fluidics	3	60
		60	1200

Required Related Courses

Math Elective	3	45
English Elective	3	45
Social Science Elective	3	45
Electives	6	90
	15	225
	75	1425

Additional Major Courses

FLP 120	Fluid Power For Mechanical Trades	3	60
FLP 125	Analyzing Hydraulic Circuits	3	60
FLP 126	Hydraulic Schematics	3	60
FLP 218	Advanced System Components & Circuits	3	60
FLP 219	Advanced Troubleshooting — Safety	3	60
FLP 220	Advanced Fluid Power, Hydraulic & Pneumatic Maintenance	3	60
FLP 225	Air Brake and Anti Skid Systems	3	60
FLP 230	Compressor Overhaul	3	60
FLP 297	Cooperative Work Experience	2-9	60-375
FLP 299	Independent Study	3	90

FLUID POWER (R)

FLP 100 Safety — Introduction & Orientation . . . . . 3 Cr. Hrs.
Identification and use of basic hand tools and orientation to the Fluid Power field.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 105 Basic Principles of Hydraulics . . . . . 3 Cr. Hrs.
Fundamentals of hydraulic systems, the principles of hydraulics, performing shop laboratory experiments using shop trainers.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 106 Fluids For Hydraulics, Sealing Devices . . . . . 3 Cr. Hrs.
Petroleum base fluids, viscosity, fire resistant fluids, water glycol, water-in-oil emulsions, and neutralization number of oils.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 107 Source Of Hydraulic Power . . . . . 3 Cr. Hrs.
Disassemble, inspect, repair or replace worn parts and assemble and test gear, vane and piston pumps in accordance with the manufacturers specifications.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 108 Control Of Hydraulic Power . . . . . 3 Cr. Hrs.
Repair, adjust, test and install hydraulic controls as listed by the instructor. Flow control valves to meet the manufacturer's specification; the set time and adjusting all balanced and unbalanced direct and pilot operated relief valves to meet manufacturer's specification; and disassemble, repair and test all solenoid control valves according to the manufacturer's specifications.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 109 Hydraulic Actuators — Motors — Cylinders . . . . . 3 Cr. Hrs.
Repair, test, and select the proper actuator cylinder or motor for the job, using shop manuals according to the manufacturer's specification; and select the proper hydraulic motor for different torque, pressures, and G.P.M. to the customer's specifications using charts and graphs.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 110 Distribution Of Hydraulic Power . . . . . 3 Cr. Hrs.
Proper hoses, tubing, or pipe for any given volume or pressure setting, using charts and graphs; and manufacture and test flex hose and rigid tubing in sizes and lengths.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 115 Conditioning Power Fluids . . . . . 3 Cr. Hrs.
Selecting the proper filter, reservoir, heat exchanger, and strainers for any given hydraulic system; identifying correctly, various types of filter elements, full flow, and by-pass indicators, and taking Mil Pore "A" pressure readings across filter elements.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 116 Pump, Overhaul & Testing . . . . . 3 Cr. Hrs.
Disassemble, inspect, repair, assemble, and test GEAR, VANE, and piston types pumps; using pump overhaul kits; test the pump on shop test equipment for proper G.P.M., P.S.I., and for volumetric efficiency at rapid R.P.M. using the manufacturer's test charts.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 117 Components, Overhaul & Testing . . . . . 3 Cr. Hrs.
Disassemble, inspect, and repair relief valves, directional control valves, pressure reducing valves, actuating cylinders, and other hydraulic components used in a hydraulic system in accordance with the manufacturer's recommended procedures and test charts, and hook up components to the shop test equipment for proper testing and adjustments.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 120 Fluid Power For Mechanical Trades . . . . . 3 Cr. Hrs.
Orientation to the field of Fluid Power, general principles, initial techniques and skill development, and how Fluid Power relates to the various mechanical trades.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 125 Analyzing Hydraulic Circuits . . . . . 3 Cr. Hrs.
The students will learn how to analyze hydraulic systems, drawings and determine the how and why of the system and the hydraulic components required.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FLP 125 Analyzing Hydraulic Circuits . . . . . 3 Cr. Hrs.
The students will learn how to analyze hydraulic systems to find out what is to be done, how it's to be done, and what

hydraulic components it takes to do this job.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FLP 126 Hydraulic Schematics . . . . . 3 Cr. Hrs.
Students will plan and draw hydraulic circuits using ASIA symbols and diagrams for various hydraulic systems as designated by the instructor.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FLP 200 Basic Pneumatics — Safety . . . . . 3 Cr. Hrs.
Application of basic physical laws of fluids and mechanics pertaining to fluid power.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 205 Compressors . . . . . 3 Cr. Hrs.
Operation and physical characteristics of most positive and non-positive displacement compressors, and procedures for dismantling, inspecting, and adjusting.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 206 Primary, Secondary Air Treatment . . . . 3 Cr. Hrs.
Operation and application of primary-secondary air treatment units.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 207 Control Valves . . . . . 3 Cr. Hrs.
Operation, adjustments, and repair of control valves.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 208 Cylinders, Motors, Pneumatics . . . . . 3 Cr. Hrs.
Maintaining pneumatic cylinder motors, principles of operation, and construction.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 209 Piping, Hose, Fitting, Pneumatic Systems . . . . . 3 Cr. Hrs.
Fabricate, inspect, install and test air system piping hoses.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 210 Relief Valves, Pneumatic Systems . . . . . 3 Cr. Hrs.
Disassemble, inspect, repair, assemble, and test relief valves.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 215 Pneumatic Logic Controls . . . . . 3 Cr. Hrs.
Methods whereby control answers can be attained.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 216 Troubleshooting, Print Reading . . . . . 3 Cr. Hrs.
Troubleshoot basic pneumatic circuit, using manuals and prints.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 217 Basic Fluidics . . . . . 3 Cr. Hrs.
Operation of fluidic (non-moving part) logic devices and their application in problem solving.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 218 Advanced System Components & Circuits . . . . . 3 Cr. Hrs.
JIC standards, graphic symbols, schematic diagrams, hydrostatic drives, and servo controls for the advanced hydraulic mechanic.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 219 Advanced Troubleshooting — Safety . . . 3 Cr. Hrs.
Various methods of troubleshooting complete hydraulic and pneumatic systems, both in the field and laboratory setting, using portable test equipment and shop test stands.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 220 Advanced Fluid Power, Hydraulic & Pneumatic Maintenance . . . . . 3 Cr. Hrs.
Hydraulic and pneumatic shop procedures. Manufacturer's specifications of hydraulic and pneumatic components, as well as local shop visits for the advanced mechanic.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 225 Air Brake and Anti Ski Systems. . . . . 3 Cr. Hrs.
Students will learn fundamentals of the air brake, and anti skid systems, and principles of operation.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FLP 230 Compressor Overhaul . . . . . 3 Cr. Hrs.
Students will learn overhaul procedures using manufacturor's manuals and specifications.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 45-360 Hrs. Lab. 60-375 Ct. Hrs.

FLP 299 Independent Study . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Fluid Power Program, and is outside the program offerings.
90 Hrs. Lab. 90 Ct. Hrs.

FOREIGN AUTOMOTIVE MECHANICS (A)

Certificate or Associate Degree

This program provides the student with job entry skills for the foreign automotive trade and upgrading for those in the field who need to acquire more skill.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
FAM 100	Orientation, Safety, Basic Electrical and Ignition Systems	3	60
FAM 105	Starting and Charging Systems	3	60
FAM 106	Carburetor Service	3	60
FAM 107	Oscilloscopes and Electronic Testing	3	60
FAM 108	Emission Control	3	60
FAM 109	Drum Brake Systems	3	60
FAM 110	Disc Brake Systems	3	60
FAM 115	Wheel Alignment	3	60
FAM 116	Wheel Balance and Suspension	3	60
FAM 117	Steering Gears and Systems	3	60
FAM 200	Clutches and Manual Transmissions	3	60
FAM 205	Drive Lines and Differentials	3	60
FAM 206	Automatic Transmission, Theory and Maintenance	3	60
FAM 207	Automatic Transmission Rebuilding	6	120
FAM 208	Engine Operation, Diagnosis, Disassembly and Measurement	6	120
FAM 209	Engine Reconditioning and Assembly	3	60
FAM 210	Air Conditioning Theory, Service and Safety	3	60
FAM 215	General Service Repair or one of the following: inter-department elective or cooperative work experience	3	60
		60	1200

Required Related Courses

English or Comm. Elective	3	45
Mathematics Elective	4	60
Social Science Elective	3	45
	10	150
TOTAL REQUIRED HOURS	70	1350

Additional Major Courses

FAM 216	Customer Service	6	120

FOREIGN AUTOMOTIVE MECHANICS (A)

FAM 100 Orientation, Safety, Basic Electrical and Ignition Systems . . . . . 3 Cr. Hrs.
In this unit, the student will learn about the automotive program, general shop safety, basic engine operations, electrical theory, conventional and solid state ignition systems and metric system.
24 Hrs. Theory - 36 Hrs. Lab. 60 Ct. Hrs.

FAM 105 Starting and Charging Systems . . . . . 3 Cr. Hrs.
In this unit, the student will learn the theory of operation of charging and starting systems and how to diagnose and repair the systems.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 106 Carburetor Service. . . . . 3 Cr. Hrs.
In this unit, the student will learn the theory of operation and how to rebuild and adjust, one, two, and four barrel carburetors.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 107 Oscilloscopes and Electronic Testing. . . 3 Cr. Hrs.
In this unit, the student will learn how to read oscilloscope patterns and use electronic testing instruments.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 108 Emission Control . . . . . 3 Cr. Hrs.
In this unit, the student will learn the theory of operation and how to repair emission control components.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 109 Drum Brake Systems . . . . . 3 Cr. Hrs.
In this unit, the student will learn hydraulic principles, theory, and service as applied to the automotive brake systems.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 110 Disc Brake Systems . . . . . 3 Cr. Hrs.
This unit includes theory, operation, and service on automotive disc brakes.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 115 Wheel Alignment . . . . . 3 Cr. Hrs.
This unit includes theory, operation, and service of wheel alignment.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 116 Wheel Balance and Suspension . . . . . 3 Cr. Hrs.
This unit includes theory and service of wheel balance and suspension.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 117 Steering Gears and Systems . . . . . 3 Cr. Hrs.
This unit includes theory and service of steering gears and systems.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 200 Clutches and Manual Transmissions . . . 3 Cr. Hrs.
This unit includes construction, operation, and service techniques for standard transmission clutches.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 205 Drive Lines and Differentials . . . . . 3 Cr. Hrs.
This unit includes service procedures and construction of universal joints, drive lines, and differential assemblies.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 206 Automatic Transmissions, Theory and Maintenance . . . . . 3 Cr. Hrs.
This unit includes theory of operation and servicing automatic transmissions.
24 Hrs. Theory - 36 Hrs. Lab. 60 Ct. Hrs.

FAM 207 Automatic Transmission Rebuilding . . . 6 Cr. Hrs.
This unit includes diagnosing malfunctions and rebuilding automatic transmissions.
48 Hrs. Theory - 72 Hrs. Lab 120 Ct. Hrs.

FAM 208 Engine Operation, Diagnosis, Disassembly and Measurement . . . . . 6 Cr. Hrs.
This unit includes engine overhaul procedures, disassembly, and measurement with micrometers and special tools.
48 Hrs. Theory - 72 Hrs. Lab 120 Ct. Hrs.

FAM 209 Engine Reconditioning and Assembly . . 3 Cr. Hrs.
This unit includes assembly procedures and reconditioning of the complete engine.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 210 Air Conditioning Theory, Service and Safety . . . . . 3 Cr. Hrs.
This unit includes the service, theory and safety procedures on automotive air conditioning.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

FAM 215 General Service Repair . . . . . 3 Cr. Hrs.
This unit includes work on customer cars and any work the student needs to complete the program, with the advisor's permission.
24 Hrs. Theory - 36 Hrs. Lab. 60 Ct. Hrs.

FAM 216 Customer Service. . . . . 6 Cr. Hrs.
A student may take this course, with the advisor's permission, for additional experience in general service repair and live work.
48 Hrs. Theory - 72 Hrs. Lab 120 Ct. Hrs.

HEAVY EQUIPMENT OPERATION & PREVENTIVE MAINTENANCE (R)

Certificate or Associate Degree

The program is designed to train a person with job entry skills to enter the heavy equipment operation field.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HEO 100	Safety Orientation & Starting Procedures	3	60
HEO 105	Maintenance & Adjustments	3	60
HEO 106	Operating Equipment	3	60
HEO 107	Field Tasks — Initial Grading	3	60
HEO 108	Field Tasks — Sub-grading	3	60
HEO 109	Field Tasks — Initial Finish Work	3	60
HEO 110	Field Tasks — Dozer Equipment	3	60
HEO 115	Field Tasks — Scraper Equipment	3	60
HEO 116	Field Tasks — Grader Equipment	3	60
HEO 117	Field Tasks — Loader & Bachoe Equipment	3	60
HEO 118	Advanced Maintenance	3	60
HEO 119	Advanced Field Tasks — Finish Grade	3	60
HEO 120	Advanced Field Tasks — Special Projects	3	60
WEF 108	S.M.A.W. Safety & Electrode Identification Padding	3	60
WEF 109	S.M.A.W. Joint Designs, All Electrodes	3	60

WEF 110	S.M.A.W. Joint Designs, All Positions	3	60
WEF 115	A.W.S. Testing 7018	3	60
WEF 116	A.W.S. Testing 6010	3	60
FLP 105	Basic Principles of Hydraulics	3	60
FLP 107	Source of Hydraulic Power	3	60
	TOTAL REQUIRED HOURS	60	1200

Required Related Courses

	Math Elective	3	45
	English Elective	3	45
	Social Science Elective	3	45
	Elective	3	45
		12	180
		72	1380

Additional Major Courses

HEO 297	Cooperative Work Experience	2-0	60-375
HEO 299	Independent Study	3	90

HEAVY EQUIPMENT OPERATION & PREVENTIVE MAINTENANCE (R)

HEO 100 Safety Orientation & Starting Procedures . . . . . 3 Cr. Hrs.
Safety, orientation to earth moving field, inspection, reading gauges, starting and shutting off engines.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

HEO 105 Maintenance & Adjustments . . . . . 3 Cr. Hrs.
Prerequisite: HEO 100
Maintenance procedures and training in adjusting steering systems, brakes, power units, dozer blades, scraper blades, and ripper equipment.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

HEO 107 Operating Equipment . . . . . 3 Cr. Hrs.
Manipulating and coordinating controls used to operate heavy equipment.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 107 Field Tasks — Initial Grading . . . . . 3 Cr. Hrs.
Field work designed to give experience in making cuts and fills, moving dirt, rock, and vegetation. Establishing sub-grades.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 108 Field Tasks — Sub-Grading . . . . . 3 Cr. Hrs.
Field work designed to give experience in stake reading, rolling, packing, burying, and piling earth to establish final grades.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 109 Field Tasks — Initial Finish Work . . . . . 3 Cr. Hrs.
Additional field work designed to develop skill in initial finish work.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 110 Field Tasks — Dozer Equipment . . . . . 3 Cr. Hrs.
Field work experience in operating a cable or hydraulic dozer.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 115 Field Tasks — Scraper Equipment . . . . . 3 Cr. Hrs.
Field work experience in operating a self-loading, or push scraper.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 116 Field Tasks — Grader Equipment . . . . . 3 Cr. Hrs.
Field work experience in operating a grader.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 117 Field Tasks — Loader & Bachoe Equipment . . . . . 3 Cr. Hrs.
Field work experience in operating a loader and bachoe.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 118 Advanced Maintenance . . . . . 3 Cr. Hrs.
Advanced continuation of HEO 105 dealing with the fine points of heavy equipment maintenance, which is performed by the operator.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 119 Advanced Field Tasks — Finish Grade . . 3 Cr. Hrs.
Field work experience on making finish grade.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 120 Advanced Field Tasks — Special Projects . . . . . 3 Cr. Hrs.
Additional field work experience on making finish grade and on equipment where more experience is needed.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HEO 297 Cooperative Work Experience . . . . . 2-9 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 45-360 Hrs. Lab. 60-375 Ct. Hrs.

HEO 299 Independent Study . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Heavy Equipment Program, and is outside the program offering.
90 Lab. Hrs. 90 Ct. Hrs.

WEF 108 S.M.A.W. Safety & Electrode Identification Padding . . . . . 3 Cr. Hrs.
The student will understand and practice all safety rules and regulations of the shop area. The electrode identification by the number system and how to weld in 1G and 2G positions to be studied.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

WEF 109 S.M.A.W. Joint Designs, All Electrodes (A,N,R) . . . . . 3 Cr. Hrs.
The student will learn all joint designs and weld stringer beads with all electrodes in the 1G, 2G, 3G, and 4G positions.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

WEF 110 S.M.A.W. Joint Designs, All Positions (A,N,R) . . . . . 3 Cr. Hrs.
The student will learn to weld in the 2G, 3G, and 4G positions using different electrodes in all joints.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

WEF 115 A.W.S. Testing 7018 (A,N,R) . . . . . 3 Cr. Hrs.
The student will learn how to weld beveled test plates with backing plates in the 1G, 2G, 3G, and 4G positions using 7018 in accordance with standards set by the American Welding Society.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

WEF 116 A.W.S. Testing 6010 (A,N,R) . . . . . 3 Cr. Hrs.
The student will learn how to weld open beveled test plates in the 1G, 2G, 3G, and 4G positions using 6010 in accordance with standards set by the American Welding Society.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

FLP 105 Basic Principles of Hydraulics . . . . . 3 Cr. Hrs.
Fundamentals of hydraulic systems, the principles of

hydraulics, performing shop laboratory experiments using shop trainers.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

FLP 107 Source of Hydraulic Power . . . . . 3 Cr. Hrs.
Disassemble, inspect, repair or replace worn parts and assemble and test gear, vane and piston pumps in accordance with the manufacturers specifications.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

SPORTS CRAFTS AND SPECIALTY AREA MECHANICS (N)
2 year Certificate

This program is designed to prepare individuals with job entry skills for small engines and specialty mechanics field. The program places emphasis on small engines, chain saws, motorcycles, outboards, and snowmobiles.

Sports Craft and Specialty Area Mechanics is structured on a 3 week, 60 contact hour module; however, a great deal of flexibility exists. A full load would be five of the three hour modules offered concurrently.

Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors.

A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty advising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Sports Craft student may select the job entry skills he/she wants to develop. The student may certify as having entry level skills in Basic Engines, Ignition, Carburetors in 21 week, Transmission and Clutches in 3 weeks, General Service in 6 weeks, Snowmobile in 6 weeks, Outboard Repair in 9 weeks, Chain Saws in 3 weeks and/or Motorcycle in 9 weeks as well as the entire two year certificate.

The Sports Craft program uses an individualized, self paced, multimedia instructional approach. Faculty lectures and/or small group demonstration is incorporated with hands-on practical laboratory experience.

New students need not wait for the next formal registration as they may be admitted to the machine shop program at any time providing an opening exists.

A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student, will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

BASIC ENGINES, IGNITION, CARBURETORS
(21 Week Certificate)

Course No.	Title	Cr. Hrs.	Ct. Hrs.
SCS 100	Basic Engines, Tools and Safety	3	60
SCS 101	Carburetion and Fuel Systems	3	60
SCS 102	Ignition Systems	3	60
SCS 103	Ignition Tune Up and Repair	3	60
SCS 104	Carburetion and Fuel System TuneUp	3	60
SCS 105	Engine Rebuild and Special Tools	3	60
SCS 106	Dynamometer	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

TRANSMISSION AND CLUTCHES
(3 Week Certificate)

SCS 107	Transmissions and Clutches	3	60

GENERAL SERVICE
(9 Week Certificate)

SCS 111	General Service and Repair I	3	60
SCS 112	General Service and Repair II	3	60
SCS 113	General Service and Repair III	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

SNOWMOBILE
(6 Week Certificate)

SCS 115	Snowmobile and Suspension Systems	3	60
SCS 116	Snowmobile Drive Mechanisms	3	60

OUTBOARD REPAIR
(9 Wk Certificate)

SCS 117	Outboard Safety and Ignition	3	60
SCS 118	Outboard Carburetion and Power Heads	3	60
SCS 119	Outboard Trouble-Shooting	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

CHAINSAWS
(3 Week Certificate)

SCS 125	Chain Saws	3	60

MOTORCYCLE
(9 Week Certificate)

SCS 126	Motorcycle Safety and Component Parts	3	60
SCS 127	Motorcycle Carburetion and Ignition	3	60
SCS 128	Motorcycle Engines and Transmissions	3	60

Two Year Certificate
Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
SCS 100	Basic Engines, Tools, and Safety	3	60
SCS 101	Carburetion and Fuel Systems	3	60
SCS 102	Ignition Systems	3	60
SCS 103	Ignition Tune Up and Repair	3	60
SCS 104	Carburetion and Fuel System Tune Up	3	60
SCS 105	Engine Rebuild and Special Tools	3	60
SCS 106	Dynamometer	3	60
SCS 107	Transmissions and Clutches	3	60
SCS 115	Snowmobile and Suspension Systems	3	60
SCS 116	Snowmobile Drive Mechanisms	3	60
SCS 117	Outboard Safety and Ignition	3	60
SCS 118	Outboard Carburetion and Power Heads	3	60
SCS 119	Outboard Trouble-Shooting	3	60
SCS 125	Chain Saws	3	60

SCS 126	Motorcycle Safety and Component Parts	3	60
SCS 127	Motorcycle Carburetion and Ignition	3	60
SCS 128	Motorcycle Engines and Transmissions	3	60
SCS 111	General Service and Repair I	3	60
SCS 112	General Service and Repair II	3	60
SCS 113	General Service and Repair III	3	60
		60	1200

Required Related Courses

	General Studies Elective	3	45
	English Elective	3	45
	Math Elective	2	32
	Social Science Elective	3	45
		11	167
	TOTAL REQUIRED HOURS	71	1367

Additional Major Courses

SCS 297	Cooperative Work Experience	3	105
SCS 299	Independent Study	3	90

SCS 100 Basic Engines, Tools, and Safety (N) . . . 3 Cr. Hrs.
In this unit, the student will learn safety procedures, identify, and demonstrate proper use of hand tools. The student will also express the principles of operation and parts of two cycle and four cycle engines.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 101 Carburetion and Fuel Systems (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to express the theory and operation and demonstrate the ability to service carburetors and fuel systems.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 102 Ignition Systems (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn to express the theory and identify components of both battery and magneto ignition systems. He will also learn to perform all necessary tests on components.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 103 Ignition Tune Up and Repair (N). . . . . 3 Cr. Hrs.
In this unit, the student will perform all ignition tests and tune up engines as per manufacturers' specifications.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 104 Carburetion and Fuel System Tune Up (N). . . . . 3 Cr. Hrs.
In this unit, the student will perform necessary tests and rebuild carburetors and service fuel systems to manufacturers' specifications.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 105 Engine Rebuild and Special Tools (N). . . 3 Cr. Hrs.
In this unit, the student will learn to rebuilt engines with the aid of special tools to manufacturers' specifications.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 106 Dynamometer (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn the effects of improperly tuned engines and how component parts affect engine operation.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 107 Transmissions and Clutches (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify the parts of various types of transmissions, clutches, and their repair to manufacturers' specifications.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

SCS 115 Snowmobile and Suspension Systems (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and service steering systems, brakes, shocks, and suspension systems.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 116 Snowmobile Drive Mechanisms (N) . . . . 3 Cr. Hrs.
In this unit, the student will learn to identify and service clutches, belts, chain drives, axles, and tracks.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 117 Outboard Safety and Ignition (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn safety, tools related to outboard motor service, become familiar with outboard engines mounting and dismounting, learn electrical signs, symbols, how to read schematics, and principles of outboard ignition systems.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 118 Outboard Carburetion and Power Heads (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn the principles and service of carburetors found on outboard motors, power head disassembly and reassembly, and lower unit repairs.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 119 Outboard Trouble-shooting (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn functions and repair of outboard electrical systems, trouble-shooting, and steering assembly installation.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 125 Chain Saws (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn full service of most makes of chain saw power units and how to sharpen chains and service bars.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 126 Motorcycle Safety and Component Parts (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn safety practices, special tools, identification of component parts, and identification of various front forks and brake systems with step-by-step repair and servicing available.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 127 Motorcycle Carburetion and Ignition (N) . . . . . 3 Cr. Hrs.
In this unit, the student will learn carburetor repair and overhaul, ignition system service, and general service procedures.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 128 Motorcycle Engines and Transmission (N). . . . . 3 Cr. Hrs.
In this unit, the student will learn engine overhaul and transmission service per manufacturers' specifications.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

SCS 111-112 General Service and Repair I and II (N) . . . . . 3 Cr. Hrs. (each unit)
In these units, the student will use combined knowledge he has gained in all other units and general service and repair.
Each unit Theory 10 Hrs. - Lab 50 Hrs. 60 Ct. Hrs.

SCS 113 General Service and Repair III. . . . . 3 Cr. Hrs.
In this unit, the student will use combined knowledge he has gained in all other units and general service and repair.
Theory 10 Hrs. - Lab. 50 Hrs. 60 Ct. Hrs.

PETROLEUM TECHNOLOGY

PETROLEUM TECHNOLOGY — EXPLORATION (R)
(Certificate or Associate Degree)

The Petroleum Technology — Exploration option is designed to prepare and to provide upgrading in the petroleum exploration field. Geologic mapping and interpretation, seismic data, well log analysis, evaluation of drilling, and well test data.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
PET 105	Petroleum Industry	3	45
PET 106	Geological (map) Drafting I	6	120
PET 107	Petroleum Exploration Lab I	6	120
PET 108	Geophysical Concepts	3	45
PET 205	Geological Drafting II	6	120
PET 206	Land & Legal Aspects	3	45
PET 207	Petroleum Exploration Lab II	6	120
PET 208	Hydrocarbon Accumulation	3	45
PET 209	Exploration Case Studies	3	45
PET 218	Petroleum Economics	3	45
		42	750

Required Related Courses

EAS 101	Physical Geology	4	90
ENG 103	Occupational Communications	3	45
**	Mathematics	6	90
***	Science Elective	9/12	135/180
	Computer Science (CSC 105; CSC 201	3/4	75/90
	Petroleum Elective	6	105
		31/35	540/600
	TOTAL REQUIRED HOURS	73/77	1290/1350

**Mathematics: MAT 106, 111, 112, 113, 121 up to and including 122.

***Science Elective: Earth Science, Physics, Chemistry or Surveying.

Additional Major Courses

PET 219	Petroleum Company Procedures	3	45
PET 299	Independent Study	3	90

PETROLEUM TECHNOLOGY — PRODUCTION (R)
(Certificate or Associate Degree)

The Petroleum Technology — Production option offers desk related technology courses in reservoir characteristics, drilling and producing wells, and petroleum economics.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
PET 105	Petroleum Industry	3	45
PET 106	Geological (map) Drafting I	6	120
PET 107	Petroleum Exploration Lab. I	6	120
PET 108	Geophysical Concepts	3	45
PET 215	Petroleum Production I	6	105
PET 216	Petroleum Production II	6	105
PET 217	Petroleum Production III	6	105
PET 218	Petroleum Economics	3	45
		39	690

Required Related Courses

EAS 101	Physical Geology	4	90
ENG 103	Occupational Communications	3	45
**	Mathematics	14	210
***	Science Elective	7/8	135/150
	Computer Science (CSC 105; CSC 201)	3/4	75/90
	Petroleum Elective	6	90
		37/39	645/675
	Total Required Hours	76/78	1335/1365

**Mathematics: MAT 106, 111, 112, 113, 121, 122 up to and including 201.

***Science Elective: Physics, Chemistry or Computer Science.

PETROLEUM TECHNOLOGY(R)

PET 105 Petroleum Industry . . . . . 3 Cr. Hrs.
History, role and importance of technicians, energy spectrum and relationship to environment, world energy policies, petroleum economics, petroleum accumulation, drilling, completion, production, secondary recovery, transportation, refining, oil shale, coal gasification, and liquidification.
45 Hrs. Theory — 45 Ct. Hrs.

PET 106 Geological (map) Drafting I. . . . . 6 Cr. Hrs.
Introduction; role of illustrations, lettering, geometric constructions, orthographic projections, isometric projections, descriptive geometry (introduction), topographic maps: scales, projections, symbols, contouring, drafting practices, scribing, and posting.
30 Hrs. Theory - 90 Hrs. Lab. — 120 Ct. Hrs.

PET 107 Petroleum Exploration Lab I . . . . . 6 Cr. Hrs.
Prerequisite: PET 107
Reading geological maps, presentation of prospects, leasing (sources, bids, formouts, unit development), seismic (basic graphical presentation), well log (basic graphical presentation).
30 Hrs. Theory - 90 Hrs. Lab. — 120 Ct. Hrs.

PET 108 Geophysical Concepts . . . . . 3 Cr. Hrs.
Prerequisite: EAS 101
Magnetometer, gravity, seismic, resistivity, magneto-tellurics, remote sensing, well logging analysis (basic), geophysical field methods.
45 Hrs. Theory — 45 Ct. Hrs.

PET 205 Geological Drafting II . . . . . 6 Cr. Hrs.
Prerequisite: PET 106
History, kinds of maps, sources, geological principles and

terminology, descriptive geometry, geological maps: reproduction techniques, coloring, posting, symbols, x-sections, subsurface mapping, reproduction and office practices.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

PET 206 Land And Legal Aspects . . . . . 3 Cr. Hrs.
Prerequisite: Consent of Instructor
Leasing, spacing, depletion allowance unitization and forced pooling, taxation (capital, tangibles, intangibles), IRS, records, risks. Titles, Agreements, State, Federal, and Indian Regulations, Environmental Problems.
45 Hrs. Theory 45 Ct. Hrs.

PET 207 Petroleum Exploration Lab II . . . . . 6 Cr. Hrs.
Prerequisite: PET 107
Data gathering, basic data evaluation, complete presentation of prospect.
30 Hrs. Theory - 90 Hrs. Lab. 120 Ct. Hrs.

PET 208 Hydrocarbon Accumulation . . . . . 3 Cr. Hrs.
Source rock, subsurface geology, structural geology, petroleum traps.
45 Hrs. Theory 45 Ct. Hrs.

PET 209 Exploration Case Studies . . . . . 3 Cr. Hrs.
Prerequisite: Fourth Semester Student
Case studies in exploration from initial concept to final results.
45 Hrs. Theory 45 Ct. Hrs.

PET 215 Petroleum Production I . . . . . 6 Cr. Hrs.
Prerequisite: Consent of Instructor
Desk procedures for the technician in: Petroleum reservoir characteristics, porosity, permeability, gas behavior, phase relationships, reservoir management, properties of porous media.
60 Hrs. Theory - 45 Hrs. Lab. 105 Ct. HRs.

PET 216 Petroleum Production II . . . . . 6 Cr. Hrs.
Prerequisite: Consent of Instructor
Desk procedures for the technician in: Drilling, safety, mud logging, casing and tubing, cementing, perforating, drilling fluid behavior, well log analysis (basic).
60 Hrs. Theory - 45 Hrs. Lab. 105 Ct. Hrs.

PET 217 Petroleum Production III . . . . . 6 Cr. Hrs.
Prerequisite: Consent of Instructor
Desk procedures for the technician in: Production, flowing well, pumping well, treatment on lease location, environmental considerations, gas list, decline curves, secondary and tertiary recovery.
60 Hrs. Theory - 45 Hrs. Lab. 105 Ct. Hrs.

PET 218 Petroleum Economics. . . . . 3 Cr. Hrs.
Prerequisite: Fourth Semester Student
Elementary definition and discussion of: Interest, present worth, pay out, rate of return, depreciation, royalties, budgets, farmouts, effects of regulatory agencies, cost of environmental considerations, discounted cash flow, petroleum in world economy.
45 Hrs. Theory 45 Ct. Hrs.

PET 219 Petroleum Company Procedures . . . . . 3 Cr. Hrs.
Prerequisite: Consent of Instructor
Terminology and abbreviations, taking and sending drilling reports, lease and rental procedures, plotting well and lease locations.
45 Hrs. Theory 45 Ct. Hrs.

PET 299 Independent Study . . . . . 3 Cr. Hrs.
Prerequisite: Consent of Instructor
Petroleum related topics selected by student-instructor.
1 Consultation plus 6 hours independent work/week. 90 Ct.

QUALITY ASSURANCE

QUALITY ASSURANCE TECHNOLOGY (A)
Associate Degree

The program is designed to provide the student with the concepts of Quality Assurance. Emphasis is on the organization for quality, quality costs, quality systems, sampling techniques, process control, and the inspection techniques used in sound quality assurance programs.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DRI 100	Introduction to Drafting and Sketching	3	60
DRI 105	Basic Drafting Practices	3	60
ELT 100	DC Fundamentals	3	60
ELT 106	AC Fundamentals	3	60
QAT 100	Introduction to Quality Assurance	3	60
QAT 101	Principles of Quality Assurance I	3	60
QAT 102	Principles of Quality Assurance II	3	60
QAT 103	Principles of Quality Assurance III	3	60
QAT 201	Theory and Application of Quality Assurance I	3	60
QAT 202	Theory and Application of Quality Assurance II	3	60
QAT 203	Theory and Application of Quality Assurance III	3	60
QAT 205	Advanced Quality Assurance	3	60
QAT 206	Nondestructive Testing	2	40
QAT 207	Metrology	2	40
QAT 208	Electronic Quality Assurance	2	40
QAT 209	Procurement Quality Assurance	3	60
		45	900

Required Related Courses

	English Elective	3	45
PHY 101	Fundamentals of Physics	3	75
PHY 141	General Physics	5	105
MAT 111	Introductory Algebra	3	45
MAT 112	Intermediate Algebra	3	45
MAT 121	College Algebra	4	60
		21	375
	TOTAL REQUIRED HOURS	66	1275

QUALITY ASSURANCE TECHNOLOGY (A)

DRI 100 Introduction to Drafting and Sketching . . . . . 3 Cr. Hrs.
Introduction, lettering, linework, geometric construction, reproduction, orthographic projection, and isometric sketching.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

DRI 105 Basic Drafting Practices. . . . . 3 Cr. Hrs.
Orthographic and isometric sketching and drafting.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 100 DC Fundamentals. . . . . 3 Cr. Hrs.
In this unit, the student will learn about safety procedures, the relationship of current, voltage, resistance and power and the use of various meters to measure current, voltage, and resistance in series and parallel circuits.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

ELT 106 AC Fundamentals . . . . . 3 Cr. Hrs.
In this unit, the student will learn the AC relationships of resistance, inductive and capactive reactance, phase, voltage, impedance, current, power, and turns ration of the transformer.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 100 Introduction to Quality Assurance . . . . . 3 Cr. Hrs.
A survey course that traces the development of the concept of quality assurance. Emphasis will be on process control, product acceptance, the rejection and corrective cycle, and quality costs.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 101 Principles of Quality Assurance I . . . . . 3 Cr. Hrs.
A basic course on scope and function of quality assurance, including regulations, records, vendor selection, procurement quality and inspection, and measurement techniques.
24 Hrs. Theory 36 Hrs. Lab 60 Ct. Hrs.

QAT 102 Principles of Quality Assurance II . . . . . 3 Cr. Hrs.
This unit is a continuation of QAT 105, Principles of Quality Assurance I, including the interpretation and use of quality assurance data, and materials control.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 103 Principles of Quality Assurance III . . . . . 3 Cr. Hrs.
This unit is a continuation of QAT 106, Principles of Quality Assurance II, including rejection analysis, measuring instruments, electronic requirements.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 201 Theory and Application of Quality Assurance I. . . . . 3 Cr. Hrs.
This unit presents the latest techniques of quality assurance at the component, the assembly, and the systems level.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 202 Theory and Application of Quality Assurance II . . . . . 3 Cr. Hrs.
This unit is a continuation of QAT 201, Theory and Application of Quality Assurance I, plus quality assurance is analyzed from design concept through consumer use and disposal, including sampling, testing, data analysis, and interpretation.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 203 Theory and Application of Quality Assurance III . . . . . 3 Cr. Hrs.
This unit is a continuation of QAT 205, Theory and Application of Quality Assurance II, with emphasis on statistical analysis, cost analysis, case problem solving applications, and configuration identification and control.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 205 Advanced Quality Assurance . . . . . 3 Cr. Hrs.
An analysis of the total concept of quality assurance, including special quality experiments and quality cost optimization. Sampling by attributes and variables and troubleshooting quality problems, and the application of statistical techniques to the manufacturing process are included.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

QAT 206 Nondestructive Testing . . . . . 2 Cr. Hrs.
This unit provides a background in industrial nondestructive testing. Emphasis is given to the methods used to predict equipment performance and to the proper use of each nondestructive test. Advantages and limitations of nondestructive testing methods are reviewed.
16 Hrs. Theory - 24 Hrs. Lab 40 Ct. Hrs.

QAT 207 Metrology . . . . . 2 Cr. Hrs.
A study of the common measuring instruments that are used in quality assurance. Included are electrical, pressure, vacuum, vibration, acceleration, human error and data evaluation.
16 Hr. Theory - 24 Hr. Lab 40 Ct. Hrs.

QAT 208 Electronic Quality Assurance . . . . . 2 Cr. Hrs.
A study of procurement quality assurance techniques and policy, including regulations, records, vendor selection, and monitoring, inspection measurement instruments, test equipment and control charts applicable to receipt and shipment of goods.
16 Hrs. Theory - 24 Hrs. Lab 40 Ct. Hrs.

QAT 209 Procurement Quality Assurance . . . . . 3 Cr. Hrs.
A study of procurement quality assurance techniques and policy, including regulations, records, vendor selection, and monitoring, inspection measurement instruments, tests equipment and control charts applicable to receipt and shipment of goods.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

WELDING & FABRICATIONS

NOTE: All AWS testing is now ASME.

WELDING AND FABRICATION (R, A)
Certificate or Associate Degree

This program provides the student with job entry level skills in the welding trade and upgrading for those welders presently in the trade.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
WEF 100	Oxy-Acetylene Safety Cutting and Welding	3	60
WEF 105	Oxy-Acetylene Welding Joints	3	60
WEF 106	Brazing and Special Applications	3	60
WEF 107	Blueprint Reading and Estimating	3	60
WEF 108	S.M.A.W. Safety and Electrode Identification Padding	3	60
WEF 109	S.M.A.W. Joint Designs, All Electrodes	3	60
WEF 110	S.M.A.W. Joint Designs, All Positions	3	60
WEF 115	A.W.S Testing 7018	3	60
WEF 116	A.W.S. Testing 6010	3	60
WEF 117	A.W.S. Testing 6010 and 7018	3	60
WEF 200	Pipe Joint Design and Fabrication	3	60
WEF 205	A.W.S. Pipe Testing 2G and 5G	3	60
WEF 206	A.W.S. Pipe Testing 6G	3	60
WEF 207	G.T.A.W. Safety and Welding, All Joints	3	60
WEF 208	G.T.A.W. Welding Alloys	3	60
WEF 226	G.T.A.W. Safety and Welding, All Joints	3	60
WEF 227	G.T.A.W. Welding Alloys	3	60
WEF 209	G.M.A.W. — A.W.S. Pipe and Plate	3	60
WEF 210	Structural Shapes and Joint Design	3	60
WEF 215	Structural Layout and Fabrication	3	60
WEF 216	Structural Fabrication	3	60
WEF 217	Maintenance Welding and Repair or one of the following: elective, independent study, or		

	cooperative work experience	3	60
		60	1200

Required Related Courses

	English or Comm. Elective	4	60
	Math Elective	2	30
	Social Science Elective	4	60
		10	150
	TOTAL REQUIRED HOURS	70	1350

Additional Major Courses

WEF 120	Welding for Construction and Mechanical Trades (R)	3	60
WEF 218	Heavy Equipment Welding Repairs (R)	3	60
WEF 219	Certification Procedure and Preparation (A)	3	60
WEF 225	General Fabrication and Design (R)	4	80
WEF 297	Cooperative Work Experience		
WEF 299	Independent Study	3	90

WEF 100 Oxy-Acetylene Safety Cutting and Welding (A, R, N). . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to follow all shop safety rules and work in a safety conscious manner at all times. Fuel gas burning will be done with oxy-acetylene and mapp gas. The student will cut with the hand held torch as well as the track torch.
Theory 20 Hrs. - 40 Lab. Hrs. 60 Ct. Hrs.

WEF 105 Oxy-Acetylene Welding Joints (A, N, R). . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to identify metal sizes commonly used in the Weld Shop. Tip sizes and working pressures for the oxy-acetylene welding torch will be learned in addition to the correct size filler rods to correspond with tip sizes, working pressures and metals to be welded. The butt, lap, tee, and corner joints will be welded in the following positions: flat, horizontal, vertical, and overhead.

WEF 106 Brazing and Special Applications (A, N. R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to demonstrate in flat, horizontal, vertical, and overhead the following joints in the brazing method: butt, lap, tee, and corner. Special applications, or aluminum, stainless steel and copper will be done with solders.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. HRs.

WEF 107 Blueprint Reading and Estimating R) . . . . . 3 Cr. Hrs.
This unit is a study of the fundamentals of reading welding blueprints and identifying various welding processes and welding symbols. This is a basic course in estimating cost, materials, labor, and overhead.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 108 S.M.A.W. Safety and Electrode Identification Padding (A, R). . . . . 3 Cr. Hrs.
The student will understand and practice all safety rules and regulations of the shop area. The electrode identification by the number system and how to weld in 1G and 2G positions will be studied.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 109 S.M.A.W. Joint Designs, All Electrodes (A, R) . . . . . 3 Cr. Hrs.
The student will learn all joint designs and weld stringer beads with all electrodes in the 1G, 2G, 3G, and 4G positions.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 110 S.M.A.W. Joint Designs, All Positions (A, R) . . . . . 3 Cr. Hrs.
The student will learn to weld in the 2G, 3G, and 4G positions using different electrodes in all joints.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 115 A.W.S. Testing 7018 (A, R). . . . . 3 Cr. Hrs.
The student will learn how to weld beveled test plates with backing plates in the 1G, 2G, 3G, and 4 G positions using 7018 in accordance with standards set by the American Welding Society.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 116 A.W.S. Testing 6010 (A, R). . . . . 3 Cr. Hrs.
The student will learn how to weld open beleved test plates in the 1G, 2G, 3G, and 4G positions using 6010 in accordance with standards set by the American Welding Society.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 117 A.W.S. Testing 6010 and 7018 (A, R). . . . . 3 Cr. Hrs.
The student will develop the ability to weld open face joints using 6010 and 7018 electrodes in accordance with standards set by the American Welding Society.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 120 Welding for Construction and Mechanical Trades (R). . . . . 3 Cr. Hrs.
Orientation to the field of welding. General principles, initial techniques and skill development, and how welding relates to the various trades.
Theory 15 Hrs. - Lab 45 Hrs. 60 Ct. Hrs.

WEF 200 Pipe Joint Design and Fabrication (A, R) . . . . . 3 Cr. Hrs.
The student will develop the ability to identify, set up, and fabricate standard pipe joints and designs.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 205 A.W.S. Pipe Testing 2G and 5G (A, N, R). . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to properly identify the common sizes of pipe and know their O.D.'s. A test using E-6010 electrode will be made in the 2G and 5G position. Proper root gap and set up will be shown.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 206 A.W.S. Pipe Testing 6G (A, N, R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to set up and weld pipe in the 6G position. A test will be given following the A.W.S. guidelines. All coupons will be cut and marked in the prescribed manner. The E-6010 electrode will be used for this unit.
Theory 20 Hrs. - Lab. 40 Hrs. 60 Ct. Hrs.

WEF 207 G.T.A.W. Safety and Welding, All Joints (A, R) . . . . . 3 Cr. Hrs.
The student will learn G.T.A.W. (TIG) involving safety, power supply needed, and the welding of all joint designs.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 208 G.T.A.W. Welding Alloys (A, R). . . . . 3 Cr. Hrs.
The student will learn G.T.A.W. (TIG) involving final phase of welding including tube welding various metals. The student will also learn pipe welding with G.T.A.W. in accordance with standards set by the American Welding Society.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 209 G.M.A.W.—A.W.S. Pipe and Plate (A, N, R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will have welded in the 1G and 3G position on steel and aluminum. A test plate will be run in the 3G position. A 5G pipe test will be run. The

flux core process will be introduced.
Theory 20 Hrs. — 40 Hrs. Lab. 60 Ct. Hrs.

WEF 217 Maintenance Welding and Repair (A, N, R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student will be able to repair and replace broken parts on machinery and equipment, to add new metal to worn parts by different welding techniques.
20 Hrs. Theory - 40 Hrs. Lab. 60 Ct. Hrs.

WEF 218 Heavy Equipment Welding Repairs (R) . . . . . 3 Cr. Hrs.
This unit involves safety related to heavy equipment welding, electrode selection, joint design and preparation, the uses of primary, secondary, and parallel weld joints, estimating cost of repair, and outside field repair using field equipment and actual industrial applications.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 219 Certification Procedure and Preparation (A) . . . . . 3 Cr. Hrs.
The student will develop the ability to prepare and test all welding joints using applicable procedures.
Theory 20 Hrs. - Lab 40 Hrs. 60 Ct. Hrs.

WEF 225 General Fabrication and Design (R) . . . . . 4 Cr. Hrs.
Prerequisite: Instructor Permission
Project design and fabrication using welding techniques and skills previously developed.
20 Hrs. Theory - 60 Hrs. Lab. 80 Cr. Hrs.

WEF 297 Cooperative Work Experience (N, R) . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
15 Hrs. Theory - 90 Hrs. Lab. 105 Ct. Hrs.

WEF 299 Independent Study (N, R) . . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Welding and Fabrication Program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

WELDING AND FABRICATION (N)
2 Yr. Certificate and/or Associate Degree

This program provides the student with job entry level skills in the welding trade and upgrading for those welders presently in the trade.

Welding & Fabrication is structured on a 3 week, 60 contact hour module; however, a great deal of flexibility exists. A full load would be five of the three hour modules offered concurrently.

Students may be placed in any of the modules at their level of competency as evaluated by one of the program advisors.

New students need not wait for the next formal registration as they may be admitted to the welding program at any time providing an opening exists.

A student may complete some of the modules, enter the work force, then return at any time to either complete the modules or upgrade specific skills.

In order to satisfy the requirements of each of the following modules, a student will be required to perform hands-on tasks and demonstrate an understanding of the theory according to prescribed standards. If the standards are not achieved, the student will repeat or remain in the module until the necessary level of skill and knowledge is achieved.

A student has maximum flexibility in scheduling in order to meet both time and educational needs. Through faculty advising, the student can best align his/her educational objective to the program's capability to fulfill the objectives, within a suitable time frame.

The Welding student may select the job entry skills he/she wants to develop. The student may certify as having entry level skills as an arc welder in 15 weeks, a TIG welder in 9 weeks, and/or a MIG welder in 3 weeks, as well as the entire two year certificate.

The Welding Program uses an individualized, self paced, multi-media instructional approach. Faculty lectures and/or small group demonstration is incorporated with hand-on practical laboratory experience.

TWO-YEAR CERTIFICATE AND/OR TWO-YEAR ASSOCIATE DEGREE

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
WEF 100	Oxy-Acetylene Safety Cutting and Welding	3	60
WEF 105	Oxy-Acetylene Welding Joints	3	60
WEF 106	Brazing and Special Applications	3	60
WEF 119	Metallurgy for Welders	3	60
WEF 118	Drafting for Welders	3	60
WEF 125	S.M.A.W. Introduction and Safety	3	60
WEF 126	S.M.A.W. Joint Design, All Positions	3	60
WEF 127	A.W.S. Testing E-7018	3	60
WEF 128	A.W.S. Testing E-6010	3	60
WEF 129	Welding Light and Heavy Gauges	3	60
WEF 205	A.W.S. Pipe Testing 2G - 5G	3	60
WEF 206	A.W.S. Pipe Testing 6G	3	60
WEF 226	G.T.A.W. Welding Alloys and Safety	3	60
WEF 227	G.T.A.W. Welding, All Joints	3	60
WEF 209	G.M.A.W. A.W.S. Pipe and Plate	3	60
WEF 217	Maintenance Welding and Repair	3	60
WEF 220	General Shop and Improvement	3	60
WEF 221	Ornamental Iron, I	3	60
WEF 222	Ornamental Iron, II	3	60
WEF 223	Ornamental Iron, III	3	60

Required Related Courses

	General Studies Elective	3	45
	English Elective	3	45
	Math Elective	2	32
	Social Science Elective	3	45
		11	167
		71	1367

Additional Major Courses

WEF 297	Cooperative Work Experience	3	105
WEF 299	Independent Study	3	90

GAS CUTTING & WELDING
(9 Week Certificate)

Course No.	Title	Cr. Hrs.	Ct. Hrs.
WEF 100	Oxy-Acetylene Safety Cutting & Welding	3	60
WEF 105	Oxy-Acetylene Welding Joints	3	60
WEF 106	Brazing and Special Applications	3	60
		9	180

CHECK WITH ADVISOR FOR PREREQUISITES

METALLURGY FOR WELDERS
(3 Week Certificate)

WEF 119	Metallurgy for Welders	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

DRAFTING FOR WELDERS
(3 Week Certificate)

WEF 118	Drafting for Welders	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

ARC WELDING
(6 Week Certificate)

WEF 125	S.M.A.W. Introduction and Safety	3	60
WEF 126	S.M.A.W. Joint Design, All Positions	3	60
		6	120

CHECK WITH ADVISOR FOR PREREQUISITES

ARC TESTING
(6 Week Certificate)

WEF 127	A.W.S. Testing E—7018	3	60
WEF 128	A.W.S. Testing E—6010	3	60
		6	120

CHECK WITH ADVISOR FOR PREREQUISITES

ARC WELDING LIGHT & HEAVY
(3 Week Certificate)

WEF 129	Welding Light and Heavy Gauges	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

PIPE WELDING
(6 Week Certificate)

WEF 205	A.W.S. Pipe Testing 2G - 5G	3	60
WEF 206	A.W.S. Pipe Testing 6G	3	60
		6	120

CHECK WITH ADVISOR FOR PREREQUISITES

G.T.A.W. (T.I.G.)
(6 Week Certificate)

WEF 226	G.T.A.W. Welding Alloys & Safety	3	60
WEF 227	G.T.A.W. Welding, All Joints	3	60
		6	120

CHECK WITH ADVISOR FOR PREREQUISITES

G.M.A.W. (M.I.G.)
(3 Week Certificate)

WEF 209	G.M.A.W. A.W.S. Pipe and Plate	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

MAINTENANCE WELDING & REPAIR
(3 Week Certificate)

WEF 217	Maintenance Welding & Repair	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

GENERAL SHOP & IMPROVEMENT
(3 Week Certificate)

WEF 220	General Shop and Improvement	3	60

CHECK WITH ADVISOR FOR PREREQUISITES

ORNAMENTAL IRON
(9 Week Certificate)

WEF 221	Ornamental Iron, I	3	60
WEF 222	Ornamental Iron, II	3	60
WEF 223	Ornamental Iron, III	3	60
		9	180

WEF 100 Oxy-Acetylene Safety Cutting and Welding (A,N,R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to follow all shop safety rules and work in a safety conscious manner at all times. Fuel gas burning will be done with oxy-acetylene and mapp gas. The student will cut with the hand held torch as well as the track torch.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 105 Oxy-Acetylene Welding Joints (A,N,R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to identify metal sizes commonly used in the Weld Shop. Tip sizes and working pressures for the oxy-acetylene welding torch will be learned in addition to the correct size filler rods to correspond with tip sizes, working pressures and metals to be welded. The butt, lap, tee, and corner joints will be welded in the following positions: flat, horizontal, vertical and overhead.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 106 Brazing and Special Applications (A,N,R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to demonstrate in flat, horizontal, vertical and overhead the following joints in the brazing method: butt, lap, tee, and corner. Special applications, of aluminum, stainless steel and copper will be done with solders.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 119 Metallurgy for Welders . . . . . 3 Cr. Hrs.
Upon completion of this unit of instruction the student will be able to identify the different types of ferrous and non-ferrous metals utilizing basic techniques known to the trade, understand chemical and structural change of metal brought about when heating and welding, for a working knowledge of destructive and non-destructive weld testing.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 118 Drafting for Welders (N) . . . . . 3 Cr. Hrs.
Student will gain knowledge in orthographic projection, alphabet of lines, oblique and sectioning, interpretation of notes, symbols, dimensions, and tolerances with emphasis on sketching and reading shop drawings.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 125 S.M.A.W. Introduction and Safety (N) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will have welded with the E-7024, E-6013, E-7018 and E-6010 electrodes in the flat position. The horizontal, vertical and overhead padding will be done with E-7018 and E-6010 electrodes.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 126 S.M.A.W. Joint Designs, All Positions (N). . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will demonstrate the ability to properly set up and weld the lap, tee and corner joints using E-6010 and E-7018 in the flat, horizontal, vertical and overhead positions.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 127 A.W.S. Testing 7018 (N) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will have passed the slide bend test using E-7018 in the horizontal, vertical and overhead positions. The test will be taken on 3/8" plate with a back strip to meet A.W.S. standards.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 128 A.W.S. Testing 6010 (N) . . . . . 3 Hrs.
Upon completion of this unit, the student will have passed the slide bend test using E-6010 on the open bevel. This will be done in horizontal, vertical and overhead positions.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 129 Welding Light and Heavy Gauge Mild Steel (N). . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will weld 16 gauge sheet metal using E-6011 and E-7014 electrodes 3/32" in the 1G and 2G positions. The butt, lap, tee, and corner joints will be performed in the prescribed manner in accordance with A.W.S. standards. Carbon arc cutting and welding will be introduced. Large-size-electrode welding using 1/4" E-7024 in the 1G position will be practiced.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 205 A.W.S. Pipe Testing 2G and 5G (A,N,R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to properly identify the common sizes of pipe and know their O.D.'s. Welding will be taught using the beveled butt joint in the rolled and ZG position. A test using E-6010 electrode will be made in the 2G and 5G position. Proper root gap and set up will be shown.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 206 A.W.S. Pipe Testing 6G (A,N,R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to set up and weld pipe in the 6G position. A test will be given following the A.W.S. guidelines. All coupons will be cut and marked in the prescribed manner. The E-6010 electrode will be used for this unit.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 226 G.T.A.W. Welding Alloys (N) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to identify the alloys used and the filler rod for welding carbon steel and stainless steel. Welding will be done in the four positions 1G, 2G, 3G, and 4G. The use of a back purge will be taught on the open butt for stainless steel. The butt, lap, tee and edge joints will be done in all positions.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 227 G.T.A.W. Safety and Welding, All Joints (N) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will be able to perform most of the average jobs using the G.T.A.W. process. Welding will be done in the 1G, 2G, 3G, and 4G positions using aluminum as a base metal with proper selection of filler rod. The student will weld the following joints: butt, lap, tee, and edge in the above listed positions.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 209 G.M.A.W — A.W.S. Pipe and Plant (A, N, R) . . . . . 3 Cr. Hrs.
Upon completion of this unit, the student will have welded in the 1G and 3G positions on steel and aluminum. A test plate will be run in the 3G position. A 5G pipe test will be run. The flux core process will be introduced.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 217 Maintenance Welding and Repair (A,N,R) . . . . . 3 Cr. Hrs.
After completion of this unit, the student will be able to repair and replace broken parts on machinery and equipment, to add new metal to worn parts by different welding techniques.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 220 General Shop and Improvement (N) . . . . . 3 Cr. Hrs.
This unit will enable the student to have an opportunity to improve in any area of welding that he or she feels need improvement, to design, fabricate, and weld projects of their choosing.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 221 Ornamental Iron I (N) . . . . . 3 Cr. Hrs.
After completion of this unit, the student must demonstrate the ability to work in a safe manner, to maintain and operate a bending machine and other metal forming and cutting equipment. To figure bill of materials, layout, build, and estimate cost of basic metal designs and window guards, their methods of welding and procedures for installation.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 222 Ornamental Iron II (N) . . . . . 3 Cr. Hr.
After completion of this unit the student must be able to layout, figure bill of materials and fabricate walk and drive gates, wrought iron furniture, hand and porch railings, single and corner post columns patio covers.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 223 Ornamental Iron III (N) . . . . . 3 Cr. Hrs.
After completion of this unit, the student must be able to design, layout, figure bill of materials, build and estimate cost of level, slope, and "V" type post columns. Slope and curve railing, straight and spiral stair steps for interior and exterior use. The student must have a basic understanding of how the production of forged and stamped designs are produced.
Lecture 20 Hrs., Lab 40 Hrs. 60 Ct. Hrs.

WEF 297 Cooperative Work Experience (A, N, R) . . . . . 3 Cr. Hrs.
A program of study developed with coordinated college course work and industry work experience.
Theory 15 Hrs., Lab 90 Hrs. 105 Ct. Hrs.

WEF 299 Independent Study (A, N, R). . . . . 3 Cr. Hrs.
Individual study on a special project which is related to the Welding program, and is outside the program offering.
90 Hrs. Lab 90 Ct. Hrs.

DIVISION OF SERVICE OCCUPATIONS

Where a program does not indicate the campus by the key A, N, or R, we would suggest you call the campus of your choice for information.

AUDIO VISUAL TECHNOLOGY (R)

Associate Degree Program

The Audio Visual Program is designed so that a person will have experience in production of software and experience in maintenance and repair of Audio Visual hardware. Graduate will be prepared to enter business, industry and educational systems upon completion of the Program.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
AVT 100	Introduction to Educational Media	3	45
AVT 105	Audio Visual Equipment Utilization	2	30
AVT 106	Production of Audio Visual Material	4	75
AVT 108	Intro. to Audio Visual Photography	5	90
AVT 111	Scriptwriting for Educational Media	2	30
AVT 202	Advanced AV Photography I	3	45
AVT 211	A.V. Television Production I	6	113
AVT 215	Audio-Visual Audio Production	6	105
AVT 216	AV Projection Equipment Maintenance	4	75
AVT 221	Video Equipment Maintenance I	4	75
AVT 297*	Cooperative Work Experience	1-6	45-270
		41-45	728-953

* Students who are not presently employed in the profession will be required to take a maximum of 6 credit hours of AVT 297, Cooperative Work Experience before they can receive their associate degree.

Required Related Courses

Basic Electricity for Non-Elec. Majors	4	60
Basic Soldering	1	15
Transistors for Non-Elec. Majors	4	60
Introductory Algebra	4	60
English Elective	3	45
Social Science Elective	3	45
	19	285
TOTAL REQUIRED HOURS	60-64	1013-1238

Additional Major Courses

AVT 112	Advanced A.V. Scriptwriting	2	30
AVT 201	Intermediate AV Photography	3	45
AVT 203	Advanced AV Photography II	3	45
AVT 212	AV Television Production II	4	60
AVT 213	AV Television Production III	3	45
AVT 217	Audio Equipment Maintenance	4	60
AVT 222	Video Equipment Maintenance II	4	60
AVT 231	Instructional Design I	3	45
AVT 232	Instructional Design II	3	45
AVT 299	Independent Study	2-6	45-135

AUDIO VISUAL TECHNOLOGY PROGRAM (R)

AVT 100 Introduction to Educational Media . . . . . 3 Cr. Hrs.
This is an introductory course designed to enable the student to understand the aims, goals and philosophy of the educational media field. Field trips will be made to schools where new media methods are being utilized. A survey of media currently utilized will be covered.
45 Hrs. Theory — 45 Ct. Hrs.

AVT 105 Audio Visual Equipment Utilization . . . . . 2 Cr. Hrs.
This course is an introductory course designed to enable the student to operate all major audio-visual equipment, perform minor maintenance, set-up, inventory, and maintain an audio-visual equipment check-out department.
30 Hrs. Theory — 30 Ct. Hrs.

AVT 106 Production of Audio Visual Material . . . . . 4 Cr. Hrs.
This course is designed to provide the student with basic competencies of software production in the areas of lettering techniques, basic graphics, design & display. Duplication processes and transparency making will also be areas covered.
30 Hrs. Theory - 45 Hrs. Lab — 75 Ct. Hrs.

AVT 108 Introduction to Audio Visual Photography . . . . . 5 Cr. Hrs.
This is an introductory black and white course for the audio-visual photographer. Some of the areas covered are: the camera as a tool, exposure theory, film development and printing, basic studio lighting, electronic flash and filters for black and white film.
45 Hrs. Theory - 45 Hrs. Lab — 90 Ct. Hrs.

AVT 111 Scriptwriting for Educational Media . . . . . 2 Cr. Hrs.
This course will cover basic scriptwriting techniques; audience analysis, storyboard techniques, objective and subjective approaches, narrative styles and basic communication theory.
30 Hrs. Theory — 30 Ct. Hrs.

AVT 112 Advanced A.V. Scriptwriting . . . . . 2 Cr. Hrs.
Prerequisite: AVT 111
More in-depth coverage of AVT 111 with emphasis placed on scriptwriting for training and instructional media.
30 Hrs. Theory — 30 Ct. Hrs.

AVT 201 Intermediate AV Photography . . . . . 3 Cr. Hrs.
Prerequisite: AVT 108
This course is a continuation of AVT 108 with emphasis on more sophisticated darkroom procedures and more refined photographic techniques.
30 Hrs. Theory — 23 Hrs. Lab. — 53 Ct. Hrs.

AVT 202 Advanced AV Photography I. . . . . 3 Cr. Hrs.
This course will enable the student to produce slide-set and audio tape presentations. The course will cover color transparency films, color temperature, filters, location lighting, basic audio recording, copying and duplication techniques.
45 Hrs. Theory — 45 Ct. Hrs.

AVT 203 Advanced AV Photography II . . . . . 3 Cr. Hrs.
This is an advanced course in photography designed to enable the student to produce slide-sets using sophisticated graphics, communication theories and educational design theories.
45 Hrs. Theory — 45 Ct. Hrs.

AVT 211 A.V. Television Production I . . . . . 6 Cr. Hrs.
This course is designed to acquaint the student with the operations of a close-circuit television studio. The student will experience working in all phases of the operation; camera operator, sound, lighting, technical directing and set constructions.
45 Hrs. Theory - 68 Hrs. Lab. 113 Ct. Hrs.

AVT 212 AV Television Production II . . . . . 4 Cr. Hrs.
Prerequisite: AVT 211
This course is a continuation of AVT 211 with emphasis placed on the role of television as an educational or instructional media. The student will produce and direct instructional video tapes. Field trips to local production facilities will be made. The potentials and limitations of television as an educational media will be explored.
60 Hrs. Theory 60 Ct. Hrs.

AVT 213 AV Television Production III . . . . . 3 Cr. Hrs.
Prerequisite: AVT 212
This course is designed to enable the student to perform in the areas of production and direction of video tapes to fit a target audience that subscribes to cable television.
45 Hrs. Theory 45 Ct. Hrs.

AVT 215 Audio-Visual Audio Production. . . . . 6 Cr. Hrs
Prerequisites: AVT 105 and Basic Electricity for Non-Elec. Majors
This course will enable the student to perform in the basic production of audio-recording techniques, theories of physical sound, equipment usage, production techniques, editing multitrack recording, mic selection & placement and sync/slide production will be some areas to be covered.
60 Hrs. Theory - 45 Hrs. Lab 105 Ct. Hrs.

AVT 216 AV Projection Equipment Maintenance . . . . . 4 Cr. Hrs.
Prerequisite: Basic Electricity for Non-Elec. Majors
This course will enable the student to attain basic knowledge and skills in preventive maintenance and repair of 16mm motion picture projectors, slide, film strip, opaque and overhead projectors.
30 Hrs. Theory - 45 Hrs. Lab 75 Ct. Hrs.

AVT 217 Audio Equipment Maintenance . . . . . 4 Cr. Hrs.
This course will enable the student to attain basic knowledge and skills to troubleshoot audio-amplifiers, tape recorders, public address and other audio amplification systems.
60 Hrs. Theory 60 Ct. Hrs.

AVT 221 Video Equipment Maintenance I . . . . . 4 Cr. Hrs.
This course will enable the student to understand and perform; set-up, check-out and operation of black and white television cameras, television monitors and video tape recorders.
30 Hrs. Theory - 45 Hrs. Lab. 75 Ct. Hrs.

AVT 222 Video Equipment Maintenance II . . . . . 4 Cr. Hrs.
Prerequisite: AVT 221
This course will enable the student to understand the integration of complex television systems. The course includes operation and basic installation of special effects generators, sync generators, wave form monitors, video distribution systems, insert and assemble editing techniques, audio mixers, etc.
60 Hrs. Theory 60 Ct. Hrs.

AVT 231 Instructional Design I . . . . . 3 Cr. Hrs.
This course will enable the student to work in the instructional development and design of educational software using current systems approach — models and educational media. The student will be assigned to a faculty member to work in the development of software.
45 Hrs. Theory 45 Ct. Hrs.

AVT 232 Instructional Design II . . . . . 3 Cr. Hrs.
This course is a continuation of AVT 231. The student will be required to develop a specific slide presentation for a course under the direction of a faculty member including photography, software and scriptwriting.
45 Hrs. Theory 45 Ct. Hrs.

AVT 297 Cooperative Work Experience/ Practical Experience . . . . . 1-6 Cr. Hrs.
The student is assigned to a local audio visual department and is given duties related to the Audio Visual Tech. degree program. This practical training program is supervised and coordinated by a College instructor. The student works with an experienced pre-selected supervisor on the job who will grade his performance according to College standards. Regular school class attendance is required by all students participating in the course.
45-270 Hrs. Coop. 45-270 Ct. Hrs.

AVT 299 Independent Study . . . . . 2-6 Cr. Hrs.
This course provides opportunity for a student to study intensively a topic of interest under the direction of a faculty member.
45-135 Hrs. Indep. Study 45-135 Ct. Hrs.

CHEMICAL OPERATORS TRAINING PROGRAM (R)

Certificate (Contact the Service Occupations Division for information on this program).

COMMUNITY & SOCIAL SERVICE ASSOCIATE (A)
Associate Degree

Training in this program will provide entry level skills in the area of Community and Social Services. Programs may be designed in the following areas of specialization: Social Welfare, Health, Pre-school, Gerontology, Drug and Alcohol and Corrections.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
CSS 100	Introduction to Social Welfare Institutions	3	45
CSS 101	Survey of Human Services	3	45
CSS 102	Interviewing & Report Writing	3	53
CSS 103	Generic Social Work	3	53
CSS 201	Social Work Practice — Individual	3	53
CSS 202	Family Therapy	3	53
CSS 203	Social Work With Communities & Groups	3	53
CSS 204	Social Service Practice & Seminar	3	68
CSS 211	Field Practicum I	6	135
CSS 212	Field Practicum II	6	135
CSS 213	Field Practicum III	6	135
		42	828

Required Related Course

	English Elective	3	53
	Social Science Elective	6	90
	Electives Related to Area of Specialization	9	135
		18	278
	TOTAL REQUIRED HOURS	60	1106

Additional Major Courses

CSS 215	Social Services for Children and Adolescents	3	53
CSS 216	Social Services for Adults	3	53
CSS 225	Crisis Intervention	3	53
CSS 227	Social Welfare Policy	3	53
CSS 228	Transactional Analysis	3	53
CSS 229	Seminar — Child and Family (Bi-Lingual-Bi-Cultural)	3	53

COMMUNITY & SOCIAL SERVICE ASSOCIATE (A)

CSS 100 Introduction to Social Welfare Institutions . . . . . 3 Cr. Hrs.
This course will expose the beginning student to history and philosophy of social welfare institutions and their relationships to other social institutions in the United States.
45 Hrs. Theory 45 Ct. Hrs.

CSS 101 Survey of Human Services . . . . . 3 Cr. Hrs.
An orientation to services in general and specifically to the agencies identified with human services.
45 Hrs. Theory 45 Ct. Hrs.

CSS 102 Interviewing and Report Writing . . . . . 3 Cr. Hrs.
Prerequisites: CSS 100, CSS 101
This course is designed to enhance the student's skills in the areas of communication, observation, report writing, and interviewing.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 103 Generic Social Work . . . . . 3 Cr. Hrs.
Prerequisites: CSS 100, CSS 101
An analysis of the three basic social work methods. The basic concepts and principles of the three methods are viewed within the general values of the social work profession.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 201 Social Work Practice — Individual . . . . . 3 Cr. Hrs.
Prerequisites: CSS 100, CSS 101, CSS 102, CSS 103
Gives students the basic concepts, skills, tasks and activities essential to the practice of social work. Beginning familiarity with counseling methods as they apply to social work practice.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 202 Family Therapy . . . . . 3 Cr. Hrs.
Prerequisites: CSS 100, CSS 101, CSS 102, CSS 103
Provides a brief review of family functions and the roles of family members. Describes the theory and practice used in family therapy.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 203 Social Work With Communities and Groups . . . . . 3 Cr. Hrs.
Prerequisites: CSS 100, CSS 101, CSS 102, CSS 103
This course will serve as a resource for students and agency personnel planning services to communities and groups. Ways of mobilizing people and devising means to satisfy changing human needs are examined.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 204 Social Service Practice and Seminar . . . 3 Cr. Hrs.
Prerequisites: CSS 100, CSS 101, CSS 102, CSS 103
This course will utilize the seminar method using class discussion and presentation to include self-awareness; attitudes and values of the students and job oriented functions; relationship of worker and supervisor; role of the professional and the para-professional.
68 Hrs. Lab 68 Ct. Hrs.

CSS 211 Field Practicum I . . . . . 6 Cr. Hrs.
Prerequisites: CSS 100, CSS 101
Offers students opportunities to learn by participation in the delivery of services to individuals, small groups, families, organizations and/or communities.
135 Hrs. Field Work Lab 135 Ct. Hrs.

CSS 212 Field Practicum II . . . . . 6 Cr. Hrs.
Prerequisites: CSS 211
Offers students increased opportunities to learn by participating in the delivery of services to individuals, small groups, families, organizations and/or communities.
135 Hrs. Field Work Lab 135 Ct. Hrs.

CSS 213 Field Practicum III . . . . . 6 Cr. Hrs.
Prerequisites: CSS 211, CSS 212
Offers students increased opportunity with greater responsibility to learn by participating in the delivery of services to individuals, small groups, families, organizations and/or communities.
135 Hrs. Field Work Lab 135 Ct. Hrs.

CSS 215 Social Services for Children and Adolescents . . . . . 3 Cr. Hrs.
This course describes current social work services for children and adolescents and unmet needs in this area.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 216 Social Services for Adults . . . . . 3 Cr. Hrs.
This course describes the current social work services for adults and other needs in this area.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 225 Crisis Intervention . . . . . 3 Cr. Hrs.
This course focuses on crisis intervention and crisis counseling techniques applicable to the field of human services.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 227 Social Welfare Policy . . . . . 3 Cr. Hrs.
Models for social policy analysis: application of models to relevant social welfare issues.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 228 Transactional Analysis . . . . . 3 Cr. Hrs.
Application of learning theory and the therapeutic techniques and procedures of Transactional Analysis.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CSS 229 Seminar — Child and Family (Bi-Lingual—Bi-Cultural) . . . . . 3 Cr. Hrs.
Provides a brief review of how a family transmits culture to the child. Explore the social problems of the minority child within the dominant American culture.
30 Hrs. Theory — 23 Hrs. Lab 53 Ct. Hrs.

CRIMINAL JUSTICE PROGRAM (R)
Associate Degree Program
Law Enforcement

This program is designed to prepare individuals with job entry skills in the Criminal Justice field. The program places emphasis on law enforcement.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
CRJ 110	Introduction to Criminal Justice	4	60
CRJ 115	Criminal Law	3	45
CRJ 116	Constitutional Law	3	45
CRJ 118	Rules of Evidence	3	45
CRJ 119	Juvenile in the CJ System	3	45
CRJ 126	Patrol Procedures	4	75
CRJ 201	Introduction to Investigation	4	75
CRJ 202	Advanced Investigation	4	75
CRJ 205	Interview, Interrogation and Confession	3	45
CRJ 210	Community Relations	3	45
CRJ 215	Community Crime Prevention	3	45
CRJ 217	Narcotics and Drugs	3	53

CRJ 220	Traffic Enforcement and Accident Investigation	4	75
CRJ 297	*Cooperative Work Experience/ Practical Training	4	180
		48	908

*Required if not already employed in CJ System.

Required Related Courses

	Speech 101	3	45
	English Composition Elective	3	45
	Psychology and/or Sociology Elective	6	90
		12	180
	TOTAL REQUIRED HOURS	60	1088

Additional Major Courses

CRJ 117	Civil Law	3	45
CRJ 120	Corrections	3	45
CRJ 125	Introduction to Industrial Security	3	45
CRJ 135	Police Armament	4	75
CRJ 136	Public Service Dispatch Procedures	3	53
CRJ 206	Organized Crime: Concepts and Control	3	45
CRJ 207	Police Administration	3	45
CRJ 208	CJ Personnel Administration	3	45
CRJ 209	Police Supervision	3	45
CRJ 216	Rights and Responsibilities in Public Safety Mgmt.	3	45
CRJ 225	Breath Examiner Specialist	4	75
CRJ 227	Emergency Techniques for Police Officers	3	45
CRJ 299	Independent Study	1-6	22-135

CRIMINAL JUSTICE PROGRAM (R)

Associate Degree Program
Corrections

This program is designed to prepare individuals with job entry skills in the Criminal Justice field. The program places emphasis on corrections.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
CRJ 110	Introduction to Criminal Justice	4	60
CRJ 115	Criminal Law	3	45
CRJ 116	Constitutional Law	3	45
CRJ 119	Juvenile in CJ System	3	45
CRJ 120	Corrections	3	45
CRJ 127	Probation, Pardon, and Parole	3	53
CRJ 128	Correctional Services in the Community	3	53
CRJ 129	The Court System	3	45
CRJ 201	Introduction to Investigation	4	75
CRJ 205	Interview, Interrogation, and Confession	3	45
CRJ 208	Criminal Justice Personnel Administration	3	45
CRJ 210	Community Relations	3	45
CRJ 217	Narcotics and Drugs	3	53
CRJ 297	*Cooperative Work Experience/ Practical Training	4	180
CRJ 299	Independent Study	1-6	22-135
		46-51	856-969

* Required if not already employed in CJ System.

Required Related Courses

	Speech 101	3	45
	English Composition Elective	3	45
	Psychology and/or Sociology Elective	6	90
		12	180
	TOTAL REQUIRED HOURS	58-63	1036-1149

Additional Major Courses

CRJ 125	Introduction to Industrial Security	3	45
CRJ 206	Organized Crime; Concepts and Control	3	45
CRJ 207	Police Administration	3	45
CRJ 209	Police Supervision	3	45
CRJ 215	Community Crime Prevention	3	45
CRJ 216	Rights and Responsibilities in Public Safety Mangement	3	45
CRJ 225	Breath Examiner Specialist	4	75
CRJ 227	Emergency Techniques for Police Officers	3	45

CRIMINAL JUSTICE PROGRAM (R)

CRJ 110 Introduction to Criminal Justice ..... 4 cr. hrs.
An introduction to the components and procedures followed in the criminal justice system. Required of all criminal justice majors.
60 hrs. theory — 60 ct. hrs.

CRJ 115 Criminal Law ..... 3 cr. hrs.
An examination of the development, terms and concepts embodied in criminal law.
45 hrs. theory — 45 ct. hrs.

CRJ 116 Constitutional Law ..... 3 cr. hrs.
Provides an overview of constitutional considerations affecting the criminal justice enterprise. Landmark Supreme Court cases will be examined in detail.
45 hrs. theory — 45 ct. hrs.

CRJ 117 Civil Law ..... 3 cr. hrs.
The concepts of torts is developed as it may effect the criminal justice practitioner. Personal liability while acting in an official capacity is explored.
45 hrs. theory — 45 ct. hrs.

CRJ 118 Rules of Evidence ..... 3 cr. hrs.
Different types of evidence and legal requirements for admission in court are presented. Court decisions regarding proper use and introduction are examined in detail.
45 hrs. theory — 45 ct. hrs.

CRJ 119 The Juvenile in the Criminal Justice System ..... 3 cr. hrs.
A course designed to prepare criminal justice practitioners for the complexity of laws and procedures involved in dealing with Children's Code is extensively examined.
45 hrs. theory — 45 ct. hrs.

CRJ 120 Corrections ..... 3 cr. hrs.
An examination of the corrections components of the Criminal Justice system dealing with the history and development of corrections and special programs. Treatment approaches and problems associated with certain offenses are presented.
45 hrs. theory — 45 ct. hrs.

CRJ 125 Introduction to Industrial Security . . . . . 3 cr. hrs.
An examination of arrest, search and seizure laws and legal restraints dealing with civilian security officers. Relationships between civilian security companies and law enforcement agencies are examined.
45 hrs. theory 45 ct. hrs.

CRJ 126 Patrol Procedures . . . . . 4 cr. hrs.
The daily duties of a patrol officer are presented as well as techniques and tactics involved in conducting a patrol.
30 hrs. theory — 45 lab hrs. 75 ct. hrs.

CRJ 127 Probation, Pardon and Parole . . . . . 3 cr. hrs.
Probation as a judicial process, parole as an executive function and the use of pardons are examined and reviewed.
30 hrs. theory — 23 lab hrs. 53 ct. hrs.

CRJ 128 Correctional Services in the Community . . . . . 3 cr. hrs.
Community resources that can be brought to bear on the corrections function are examined. The role of vocational rehabilitiation, welfare services, guidance clinics and other community agencies is presented.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

CRJ 129 The Court System . . . . . 3 cr. hrs.
An examination of the U.S. court system at all levels. Emphasis is placed on procedures and jurisdictions of various courts.
45 hrs. theory 45 ct. hrs

CRJ 135 Police Armament . . . . . 4 cr. hrs.
An examination of the devices and procedures available to police for control and restraint. The FBI pistol course will be included as well as armament from non-lethal restraints to automatic weapons. Student must furnish own ammunition.
30 hrs. theory — 45 hrs. lab 75 ct. hrs.

CRJ 136 Public Service Dispatch Procedures . . . . . 3 cr. hrs.
An examination of single service and multi-service dispatch systems. Orientation on various computer terminals will be provided, as well as familiarization with different systems of communication.
30 hrs. theory — 23 hrs. lab 53 ct. hrs.

CRJ 201 Introduction to Investigation . . . . . 4 cr. hrs.
Preliminary investigative techniques to include crime scene preservation, interview of witnesses and collection of evidence are covered.
30 hrs. theory — 45 lab hrs. 75 ct. hrs.

CRJ 202 Advanced Investigation . . . . . 4 cr. hrs.
Prerequisite: CRJ 201.
Advanced investigative techniques are introduced to include facts and techniques peculiar to specific offenses. An examination of the scientific resources available to the investigator is offered.
30 hrs. theory — 45 lab hrs. 75 ct. hrs.

CRJ 205 Interview, Interrogation and Confession. . . . . 3 cr. hrs.
A course designed to present interview and interrogation techniques and differentiate between the two. Court decisions and other legal considerations bearing on obtaining and using confessions will be examined.
45 hrs. theory 45 ct. hrs.

CRJ 206 Organized Crime: Concepts and Control . . . . . 3 cr. hrs.
An examination of the known characteristics of organized crime is presented, along with some considerations appropriate for decrease or elimination.
45 hrs. theory 45 ct. hrs.

CRJ 207 Police Administration. . . . . 3 cr. hrs.
The administration of all the sub-units that comprise a police department is examined. Special emphasis will be placed on administration of the small and medium sized department which does not have the luxury of specialization.
45 hrs. theory 45 ct. hrs.

CRJ 208 Criminal Justice Personnel Administration . . . . . 3 cr. hrs.
The personnel function of a police administrator is examined. Recruitment, training pay, retirement, benefit plans and collective bargaining will be presented.
45 hrs. theory 45 ct. hrs.

CRJ 209 Police Supervision . . . . . 3 cr. hrs.
Line and mid-level supervision will be examined. Principles of management will be explored and modified as necessary to fit criminal justice situations.
45 hrs. theory 45 ct. hr.

CRJ 210 Community Relations. . . . . 3 cr. hrs.
Presentation of the role of the individual officer in achieving and maintaining public support. Public information programs and relationships with complainants is discussed.
45 hrs. theory 45 ct. hrs.

CRJ 215 Community Crime Prevention . . . . . 3 cr. hrs.
An examination of alternatives to existing reactive police practices. Through examination of such concepts as citizen involvement, comprehensive prevention, planning and environmental crime deterrance working models will be developed.
45 hrs. theory 45 ct. hrs.

CRJ 216 Rights and Responsibilities in Public Safety Management . . . . . 3 cr. hrs.
A course intended to prepare mid and upper-level management for the considerations involved in integrating the concept of collective bargaining and other organized labor practices into the unique requirements of the criminal justice enterprise.
45 hrs. theory 45 ct. hrs.

CRJ 217 Narcotics and Drugs . . . . . 3 cr. hrs.
This course will examine detection and investigation of drug dealers and users; behavior of the addict; prevention techniques and cooperation between federal agencies concerned with narcotics and drugs. Chemical properties and results of different narcotics will be presented.
30 hrs. theory - 23 lab hrs. 53 ct. hrs.

CRJ 220 Traffic Enforcement and Accident Investigation . . . . . 4 cr. hrs.
Includes definition of the traffic problem, patrol procedures, accident investigation, traffic direction and other aspects of the traffic control function of a police department.
30 hrs. theory — 45 lab hrs. 75 ct. hrs.

CRJ 225 Breath Examiner Specialist . . . . . 4 cr. hrs.
Provides for the development of practical skills leading to certification as a Breath Examiner Specialist. Includes basics of chemical testing, suspect processing and equipment operation.
30 hrs. theory — 45 lab hrs. 75 ct. hrs.

CRJ 227 Emergency Techniques for Police Officers . . . . . 3 cr. hrs.
Presentation of the medical skills often needed by police officers including first aid and emergency childbirth.
45 hrs. theory 45 ct. hrs.

CRJ 297 Cooperative Work Experience/ Practical Training . . . . . 4 cr. hrs.
The student is placed in a work station in the Denver area which is related to his educational program and occupational goal. He works under the supervision of experienced personnel at the agency involved, with a college instructor providing coordination.
180 hrs. co-op 180 ct. hrs.

CRJ 299 Independent Study . . . . . 1-6 cr. hrs.
An opportunity for a student to intensively study a specific topic of interest under the supervision of a qualified faculty member.
22 — 135 Indep. Study 22-135 ct. hrs.

DIETETIC TECHNOLOGY (N)
Certificate or Associate Degree

This allied health program is planned to provide entry level skills and/or upgrading for Food Service workers in health care areas. The training of the graduate emphasizes Food Service Management where Nutrition Care is the prime objective.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
DIT 100	Dietetics Orientation	1	15
DIT 107	Applied Dietetic Terminology	2	30
DIT 108	Nutrition for Health Occ.	3	45
DIT 110	The Modified Diet & Its' Service	4	68
DIT 121	Clinical Experience — Community Nutrition	4	150
DIT 212	Nutrition Care Seminar	3	53
DIT 222	Clinical Experience — Hospital	4	150
DIT 230	Health Care Delivery	3	45
DIT 240	Food Management Seminar	3	45
DIT 250	Dietetic Seminar	3	45
DIT 251	Clinical Experience "Skilled Care"	4	150
FSM 105	Sanitation, Safety, Tools, and Equipment	3	60
FSM 120	Volume Food Prep. & Service	3	60
FSM 125	Volume Food Production I	3	60
FSM 210	Sales Control Accountability	3	45
FSM 215	Personnel, Labor Relations and Supervision	3	45
FSM 220	Menus & Their Operational Implications	3	45
FSM 235	Purchasing & Stock Record Control	3	45
FSM 256	Specifics of Food Operations Management	3	45
FSM 257	Specifics of Food Personnel Management	3	45
		61	1246

Required Related Courses
Required related courses for Associate Degree — selection of 14 semester hrs. of credit from the following support divisions. 2 semester hrs. of the 14 hrs. must be English which is required for an Associate Degree.

Communications & Arts Social Science Science & Math	14	210
TOTAL REQUIRED HOURS	75	1456

DIETETIC TECHNOLOGY (N)

DIT 100 Dietetics Orientation (N) . . . . . 1 cr. hr.
An introduction and orientation to the field of dietetic supportive personnel. Course activities include: observations at clinical facilities, speaker presentations, and self concept development activities.
15 hrs. theory - 0 hrs. lab 15 ct. hrs.

DIT 105 Basic Nutrition (N) . . . . . 2 cr. hrs.
Prerequisite: Early Childhood Education and Management or Food Service & Management.
A survey of basic nutrition with emphasis on elements of importance to preschool and food service.
30 hrs. theory - 0 lab 30 ct. hrs.

DIT 106 Nutritional Ecology of Man (N) . . . . . 3 cr. hrs.
If you are interested in how the environment affects your nutritional requirements, this course is for you.
45 hrs. theory - 0 lab 45 ct. hrs.

DIT 107 Applied Dietetic Terminology . . . . . 2 cr. hrs.
Terminology of dietetics as used in understanding the role of dietetics in the hospital, in the human body, and in understanding the patient chart.
30 hrs. theory - 0 lab 30 ct. hrs.

DIT 108 Nutrition for Health Occupations (N) . . . . . 3 cr hrs.
This course presents basic information and nutrition and diet therapy to students in nursing, dental assisting, and dietetic technology and other health related fields.
45 hrs. theory - 0 lab 45 ct. hrs.

DIT 110 The Modified Diet and Its' Service (N) . . . . . 4 cr. hrs.
Prerequisite: DIT 108.
Understanding of diet as a therapeutic tool in general illnesses. Preparation and service of modified foods.
45 hrs. theory - 23 hrs. lab 68 ct. hrs.

DIT 120 Clinical Experience Dietetics (N) . . . . . 4 cr. hrs.
Exploration of dietetic field for student with limited background.
15 hrs. theory - 135 hrs. clinical 150 ct. hrs.

DIT 121 Clinical Experience — Community Nutrition (N) . . . . . 4 cr. hrs.
Prerequisites: DIT 100, DIT 107, DIT 108 concurrent DIT 110 or permission of instructor.
Special needs groups in the community are considered from the viewpoint of the nutritionist working with them.
15 hrs. theory - 135 hrs. clinical 150 ct. hrs.

DIT 212 Nutritional Care Seminar (N) . . . . . 3 cr. hrs.
Prerequisites: DIT 107, DIT 110, BIO 111.
A case study application of normal diet modifications to therapeutic nutrition.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

DIT 222 Clinical Experience — Hospital (N) . . . . . 4 cr. hrs.
Prerequisites: DIT 121 concurrent DIT 212.
In-hospital experience coordinated with DIT 212.
15 hrs. theory - 135 hrs. clinical 150 ct. hrs.

DIT 230 Health Care Delivery (N) . . . . . 3 cr. hrs.
Health Care Delivery Seminar: The principal food service administrative routines are considered from the administrative point of view of the supervisor and middle manager.
45 hrs. theory - 0 lab 45 ct. hrs.

DIT 240 Food Management Seminar (N) . . . . . 3 cr. hrs.
Layout, purchasing of food supplies and equipment specifically for health care food service.
45 hrs. theory - 0 lab 45 ct. hrs.

DIT 250 Dietetic Seminar (N). . . . . 3 cr. hrs.
Prerequisites: DIT 212, DIT 222, DIT 240.
Application of principles of dietetics and food management to specific health care food service situation.
45 hrs. theory - 0 lab 45 ct. hrs.

DIT 251 Clinical Experience — Skilled Care (N) . . . . . 4 cr. hrs.
Prerequisite: DIT 212 concurrent DIT 222, DIT 240, or DIT 250.
Experience in "skilled care" facility coordinated with DIT 240 or DIT 250.
15 hrs. theory - 135 hrs. clinical 150 ct. hrs.

DIT 297 Cooperative Work Experience (N) . . . . . 2 cr. hrs.
In some program areas, cooperative work experience is a part of the course of study. The student is placed at a work station, in the Metropolitan Denver area, which is related to his educational program and occupational objective. He works under the immediate supervision of experienced personnel at the business, industry or agency involved, with a College instructor providing general coordination.
15 hrs. theory - 45 hrs. lab 60 ct. hrs.

DIT 299 Independent Study in Dietetics (N) . . . . . 1-5 hrs.
Prerequisite: 2nd year standing and permission of program director.
In depth study in area of student's special interest.
22-210 ct. hrs.

EARLY CHILDHOOD EDUCATION AND MANAGEMENT (A,N,R)

Certificate or Associate Degree

The Early Childhood Education and Management Program is designed to meet the vocational training needs for personnel involved in the care of young children, (0-6) and to meet those requirements for State Social Services Licensing.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ECE 100	Intro to Early Childhood Education	3	45
ECE 101	Child Study & Observation I	6	90
ECE 105	Supv. Lab Exper. & Sem.	8	165
ECE 110	Supv. Ed. Internship & Seminar	6	120
ECE 115	Classroom Curriculum Development	5	75
ECE 146	Safety & The Preschool Child	2	30
ECE 206	Child Study & Observation II	3	45
*ECE 210	Supv. Ed. Internship & Seminar	8	165
ECE 215	Admin. I — Parent Involvement & Staff Development	3	45
ECE 216	Admin. II — Child Care Business Operation	3	45
DIT 105	Basic Nutrition	2	30
	Two of the following courses are required	6	90
ECE 102	Applied Child Growth & Development		
*ECE 116	Creative Activities		
*ECE 117	Motor Devel. & Movement Exploration (R)		
*ECE 125	Classroom App. to Language & Cognition		
*ECE 126	Classroom App. to Music & Movement		
*ECE 127	Classroom App. to Science & Math		
*ECE 196	Classroom Management Techniques		
*ECE 201	Workshop of Ideas		
*ECE 202	Workshop of Things		
		55	945

Required Related Courses

Selection of 9 semester hours from the following support Divisions. 2 semester hours of the 9 hrs. must be English which is required for an Associate Degree.

Communication & Arts		
Social Science		
Science & Math	9	135
	64	1080
TOTAL REQUIRED HOURS	64	1080

INFANT/TODDLER OPTION (N)

With permission from an instructor a substitution of the following courses for those * above will lead to an Infant/Toddler specialization certificate and/or degree.

ECE 109	Home Center Coordination	3	45
ECE 130	Devel. Issues & Activities	3	45
ECE 132	Supv. Lab. Exper: Infant/Toddler	8	165

CHILD DEVELOPMENT ASSOCIATE (N)

Competency Based Curriculum Certificate or Associate Degree

The Early Childhood Education Program is designed around a core curriculum. The Core curriculum can be achieved/earned through two approaches. The regular traditional on-campus approach or the innovative on-site field based CDA (Child Development Associate) like approach.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ECE 102	Applied Child Growth & Develop.	3	
ECE 165	Initial Assessment for the Child Development Associate	2	38
ECE 175	Learning Environments for the Child Development Associate	5	98
ECE 176	Physical & Intellectual Development for the Child Development Associate	5	98
ECE 177	Self Concept & Individual Strengths for the Child Development Associate	5	98
ECE 178	Children & Adults in Groups for the Child Development Associate	5	98
ECE 179	Admin. I Home-Center/ Parent Involvement Coordination for the Child Development Associate	5	98
ECE 180	Admin. II Staff Develop. for the Child Development Associate	5	98

ECE 185	Child Abuse & Neglect for the Child Development Associate	5	98
ECE 190	Final Assessment for the Child Development Associate	2	38
ECE 206	Child Study & Observation II	3	45
ECE 216	Child Care Business Operations	3	45
	Elective	3	45
DIT 105	Basic Nutrition	2	30
		53	972
	One of the following courses is required	3	45
ECE 116	Creative Activities		
ECE 117	Motor Devel. & Movement Exploration (R)		
ECE 125	Classroom App. to Language & Cognition		
ECE 126	Classroom App. to Music & Movement		
ECE 127	Classroom App. to Science & Math		
ECE 201/2	Workshop of Ideas		
		56	1017

Required Related Courses

Selection of 9 semester hours from the following Divisions. 2 semester hours of the 9 hrs. must be English which is required for an Associate Degree.

Communication & Arts		
Social Science		
Math & Science	9	135
TOTAL REQUIRED HOURS	65	1152

EARLY CHILDHOOD EDUCATION ASSISTING (A)
Certificate Program

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
ECE 100	Intro. to Early Childhood Education	3	60
ECE 101	Child Study & Development I	6	90
ECE 105	Supv. Lab Exper. & Sem.	8	165
ECE 110	Supv. Ed. Internship & Seminar I	6	120
ECE 115	Classroom Curriculum Development	5	75
	One of the following must be taken:	3	45
ECE 116	Creative Activities		
ECE 125	Classroom App. to Language & Cognition		
ECE 126	Classroom App. to Music & Movement		
ECE 127	Classroom App. to Science & Math		
ECE 196	Classroom Management Techniques		
		31	555

Required Related Courses

English Elective	3	45
	34	600

STATE SOCIAL SERVICE LICENSING REQUIREMENTS

To be a Director qualified by the State of Colorado Social Services Department, 24 semester hours must be completed in the following areas:

- 12 semester hours in Child Development including a methods class and a child growth & development class.
- 3 semester hours in Sociology
- 3 semester hours in Psychology
- 4 semester hours in Administration
- 2 semester hours in Basic Nutrition

24 semester hours

This core is appropriate for those who have already complete the State Social Service requirement of verifiable work experience with the young child.

EARLY CHILDHOOD EDUCATION & MANAGEMENT (A,N,R)

ECE 100 Introduction to Early Childhood Education (A,N,R) . . . . . 3 Cr. Hrs.
Through the observation and recording of children and educators in various settings, students will develop an understanding of the field of Early Childhood.
45 Hrs. Theory — 45 Ct. Hrs.

ECE 101 Child Study & Development I (A,N,R) . . . . . 6 Cr. Hrs.
The study of the child from prenatal through 6 — the integration of physical, social, emotional and cognitive development will be observed and interpreted by the student for a better understanding of the whole child.
6 Hrs. Theory — 90 Ct. Hrs.

ECE 102 Applied Child Growth & Development (N). . . . . 3 Cr. Hrs.
An in-depth study designed to give fundamental knowledge of the child's physical, intellectual, social, emotional growth and development individually and in groups.

45 Hrs. Theory — 45 Ct. Hrs.

ECE 105 Supervised Lab Experience & Seminar (A,N,R). . . . . 8 Cr. Hrs.
This course provides the first supervised experience working with children in group settings. It provides an introduction to all areas of curriculum and many areas of operating a center. A weekly staff meeting for planning, evaluation and staff development in child development will be held.
30 Hrs. Theory - 135 Hrs. Lab — 165 Ct. Hrs.

ECE 109 Home Center Coordination (N). . . . . 3 Cr. Hrs.
Prerequisites: concurrent enrollment in supervised lab experience.
Practical experience in bringing about optimal coordination of home and center, home visits and parent meetings included.
15 Hrs. Theory - 30 Hrs. Lab — 45 Ct. Hrs.

ECE 110 Supervised Educational Internship and Seminar (A,N,R,) . . . . . 6 Cr. Hrs.
The first field experience working with young children. Developing understanding of their growth and behavior and ability to meet their individual and group needs. Discovery of own teaching style and ways of relating to children and adults. Weekly seminar required.
30 Hrs. Theory - 90 Hrs. Lab — 120 Ct. Hrs.

ECE 115 Classroom Curriculum Development (A,N,R) . . . . . 5 Cr. Hrs.
In this course the student develops competencies in planning

and designing learning experiences and settings for children to meet their individual and group needs.
75 Hrs. Theory 75 Ct. Hrs.

ECE 116 Creative Activities (A,N,R) . . . . . 3 Cr. Hrs.
Development of appropriate experiences and activities for the young child's mastery of s/he world.
45 Hrs. Theory 45 Ct. Hrs.

ECE 117 Special Studies — Motor Development & Exploration (R) . . . . . 3 Cr. Hrs.
A course providing a participatory approach to motor development for the young child. Content will include sensorimotor experiences, movement education, use of diagnostic tools, movement teaching strategies & classroom utilization.
3 Hrs. Theory & Lab Combined 45 Ct. Hrs.

ECE 125 Classroom Application to Language & Cognition (A,N,R) . . . . . 3 Cr. Hrs.
Development of appropriate experiences and activities for the young child's mastery of s/he world.
45 Hrs. Theory 45 Ct. Hrs.

ECE 126 Classroom Application to Music and Movement (A,N,R) . . . . . 3 Cr. Hrs.
Development of appropriate experiences and activities for the young child's mastery of s/he world.
45 Hrs. Theory 45 Ct. Hrs.

ECE 127 Classroom Application to Science and Math (A,N,R) . . . . . 3 Cr. Hrs.
Development of appropriate experiences and activities for the young child's mastery of s/he world.
45 Hrs. Theory 45 Ct. Hrs.

ECE 130 Developmental Issues & Activities (N) . . . . . 3 Cr. Hrs.
This course is designed to integrate the developmental theory with an application in Infant/Toddler settings. Students will observe as well as explore, and utilize and develop age appropriate activities for very young children.
45 Hrs. Theory 45 Ct. Hrs.

ECE 132 Supervised Lab Experience (N) . . . . . 8 Cr. Hrs.
This course provides a supervised experience working with infants and toddlers in a group setting. It involves giving care & stimulation appropriate to individual children's growth & developmental needs. Students also participate in weekly seminars designed to facilitate planning & evaluation for specific needs of children.
30 Hrs. Theory - 135 Hrs. Lab 165 Ct. Hrs.

ECE 133 Supervised Education Internship & Seminar I (N) . . . . . 8 Cr. Hrs.
A supervised field experience in an Infant/Toddler setting working with the very young child. Students will participate in daily activities designed to increase their abilities to give appropriate care & stimulation relevant to the developmental age of infants & toddlers.
30 Hrs. Theory - 135 Hrs. Lab 165 Ct. Hrs.

ECE 134 Home-Center Coordination II (N) . . . . . 3 Cr. Hrs.
This course is designed to develop optimal, coordination and understanding between caregivers and parents. Students will make home visits and plan meetings and develop techniques for understanding and working with parents of very young children.
15 Hrs. Theory - 30 Hrs. Lab 45 Ct. Hrs.

ECE 136 Infant/Toddler Seminar for Parents I (N) . . . . . 3 Cr. Hrs.
This seminar will address those specific issues that present themselves in the care and development of the individual children enrolled in the Infant/Toddler setting. It will also incorporate some general child development theories and practices. At times parents will observe and participate with their child, utilize equipment or design activities to meet the needs of their child. (Required of parents of Infants/Toddlers enrolled.)
15 Hrs. Theory - 30 Hrs. Lab 45 Ct. Hrs.

ECE 138 Infant/Toddler Seminar for Parents II (N) . . . . . 2 Cr. Hrs.
This seminar will continue to address specific issues presented in the previous seminars. Students will go into depth on specific developmental areas related to the young child. It will also incorporate some general child development theories and practices. At times parents will observe, participate with their child, utilize equipment or design activities to meet the needs of their child. (Required for parents of infants/toddlers enrolled.)
15 Hrs. Theory - 30 Hrs. Lab 45 Ct. Hrs.

ECE 146 Safety & The Preschool Child (A,N,R) . . . . . 2 Cr. Hrs.
A fundamental course in first aid and setting up and maintaining a healthy and safe environment for children.
30 Hrs. Theory 30 Ct. Hrs.

ECE 165 Initial Assessment for Child Development Associate (N) . . . . . 2 Cr. Hrs.
Prerequisite: Permission of Instructor.
Initial Assessment is designed to establish a base line of performance and knowledge in six competency areas to enable prescriptive training.
15 Hrs. Theory - 23 Hrs. Lab 38 Ct. Hrs.

ECE 175 Learning Environments for the Child Development Associate (N) . . . . . 5 Cr. Hrs.
A course in which the student learns to set up and maintain environment which is safe, healthy and conducive to creative learning.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

ECE 176 Physical & Intellectual Development for the Child Development Associate (N) . . . . . 5 Cr. Hrs.
Introduction to methods and theories of teaching the young child while developing skills in the physical, cognitive, creative and language areas.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

ECE 177 Self-Concept & Individual Strength for the Child Development Associate (N) . . . . . 5 Cr. Hrs.
Designed to aid the student in developing the child's positive self-image and awareness of feelings. Intensified lab school experience includes major trends in child growth and development.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

ECE 178 Children & Adults in Groups for the Child Development Associate (N) . . . . . 5 Cr. Hrs.
A study of the factors involved in the teaching/learning process, the relationship of children and adults functioning together in planned group environments and in group management.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

ECE 179 Admin. I — Home/Center Parent Involvement Coordination for the Child Development Associate (N) . . . . . 5 Cr. Hrs.
Techniques for bringing about optimal coordination of home and center. Child rearing practices and expectations are included in program planning.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

ECE 180 Staff Development for the Child Development Associate (N) ..... 5 Cr. Hrs.
Administrative and supplementary responsibilities related to children's programs are given with an emphasis on staff development and training. Staff will plan and implement children's program.
30 Hrs. Theory - 68 Hrs. Lab. 98 Ct. Hrs.

ECE 185 Child Abuse & Neglect for the Child Development Associate (N) ..... 5 Cr. Hrs.
This course will assist non-professional child care workers to understand and to take action in a constructive way against child neglect and abuse.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

ECE 190 Final Assessment for the Child Development Associate (N) ..... 2 Cr. Hrs.
Final Assessment is designed to establish exiting competence in six CDA competency areas for recommendation for national CDA assessment and credentialing.
15 Hrs. Theory - 23 Hrs. Lab 38 Ct. Hrs.

ECE 194 Intro. to Early Childhood Ed. for the Day Care Home Provider (A,N,R) ..... 2 Cr. Hrs.
A course designed to explore the various aspects of meeting the needs of young children & parents in the home setting.
30 Hrs. Theory 30 Ct. Hrs.

ECE 195 Infant Stimulation (N) ..... 3 Cr. Hrs.
A course designed to enable students to appropriately encourage development of very young children.
30 Hrs. Theory - 23 Hrs. Lab 53 Ct. Hrs.

ECE 196 Classroom Management Techniques (A,N,R) ..... 3 Cr. Hrs.
A course designed to explore various techniques and theories for understanding and coping with children individually and in group settings.
45 Hrs. Theory 45 Ct. Hrs.

ECE 197 Specialized Learning Environments — Home (A,N,R) ..... 3 Cr. Hrs.
Design of learning environments and materials appropriate for child care in the home.
45 Hrs. Theory 45 Ct. Hrs.

ECE 198 Specialized Learning Environments — Outdoors (A,N,R) ..... 3 Cr. Hrs.
Design of appropriate environments to maximize development of the young child in the outdoors.
45 Hrs. Theory 45 Cr. Hrs.

ECE 199 Specialized Learning Environments — Special Needs (A,N,R) ..... 3 Cr. Hrs.
Design of appropriate materials and learning environment for children with special needs.
45 Hrs. Theory 45 Ct. Hrs.

ECE 201 Workshop of Ideas (A,N,R) ..... 3 Cr. Hrs.
This course is designed to meet needs of teachers currently in the field. It includes a brief review of basic early childhood practices and an introduction to recent developments in the field.
45 Hrs. Theory 45 Ct. Hrs.

ECE 202 Workshop of Things (A,N,R) ..... 3 Cr. Hrs.
Examination of commercial and teacher made materials related to current learning models. Teacher design and create teaching materials for their own classroom.
45 Hrs. Theory 45 Ct. Hrs.

ECE 206 Child Study & Observ. II ..... 3 Cr. Hrs.
Through analysis of theories and recent trends relevant to the learning process, the student shall develop a philosophy of education. Observations will be included.
45 Hrs. Theory 45 Ct. Hrs.

ECE 210 Supervised Education Internship & Seminar II (A,N,R) ..... 8 Cr. Hrs.
Assumption of increasing responsibility for program planning, implementation and evaluation for individual children as well as for the total group, parent relationships and staff development. Weekly seminar required.
30 Hrs. Theory - 135 Hrs. Lab 165 Ct. Hrs.

ECE 215 Admin. I Parent Involvement & Staff Development (A,N,R) ..... 3 Cr. Hrs.
Analysis and interpretation of supervision and administration procedures relevant to Early Childhood Education programs specifically related to the involvement of parents and staff. Community resources are studied in application to home and school needs.
45 Hrs. Theory 45 Ct. Hrs.

ECE 216 Child Care Business Operations (A,N,R) ..... 3 Cr. Hrs.
Methodology involved in starting and operating a small business including the zoning restrictions, licensing requirements, insurance, tax information, funding procedures and basic bookkeeping.
45 Hrs. Theory 45 Ct. Hrs.

ECE 299 Independent Study (A,N,R) ..... 2-6 Cr. Hrs.
For the student preparing for graduation or individual development of a special area of Early Childhood Education.

ENVIRONMENTAL TECHNOLOGY (R)
Associate Degree Program

This program is designed to prepare individuals with job entry skills for the environmental field. The Program places emphasis on air, noise, water and solid waste pollution.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
EVT 100	Introduction to Environment	3	45
EVT 105	Environmental Problems	5	90
EVT 106	Noise Pollution	5	90
EVT 107	Introduction to OSHA-COSH	3	45
EVT 108	Solid Waste Pollution	5	90
EVT 109	Water Pollution	5	90
EVT 200	Environmental Decision Making	4	60
EVT 205	Land Use and the Quality of Life	7	128
EVT 206	Industrial Hygiene	3	45
EVT 207	Atmospheric Pollution	7	128
EVT 208	Pollution Control Systems	4	60
		51	871

Required Related Courses

English Elective	3	45
Math Elective	6	90
Social Science Elective	6	90
	15	225
TOTAL REQUIRED HOURS	66	1096

Additional Major Courses

EVT 209	Data Collection Techniques & Evaluation	3	45
EVT 210	Data Processing for Environmental Tech.	3	45
EVT 215	Pictorial Drafting	3	45
EVT 216	Environmental Law	3	45
EVT 217	Map Reading and Photo. Interpretation	3	45
EVT 218	Pests and Pesticides.	5	90
EVT 297	Coop. Work Experience/ Practical Trng.	1-4	45-270
EVT 299	Independent Study	1-4	23-90

ENVIRONMENTAL TECHNOLOGY (R)
Associate Degree Program

EVT 100 Introduction to Environment . . . . . 3 cr. hrs.
An introduction to the Environmental processes as they are currently impacted by mankind. Basic environmental philosophy, techniques, and the function of the environmental technician in development of solutions will be covered.
45 hrs. theory — 45 ct. hrs.

EVT 105 Environmental Problems . . . . . 5 cr. hrs.
A review of the major environmental problems confronting mankind and their physical and psychological effects upon people. Problems involving air, water, noise and scenic pollution, solid waste disposal, land use and population growth will be identified and discussed.
45 hrs. theory - 45 hrs. lab — 90 ct. hrs.

EVT 106 Noise Pollution . . . . . 5 cr. hrs.
An introduction to noise pollution, including the psychological and physical effects of noise upon people. A familiarization with the operation of instruments used to measure noise intensity through demonstrations, field experiences and operation of the equipment by students themselves. Noise control methods used in industry and in the local community will be discussed, along with current and proposed noise control legislation.
45 hrs. theory - 45 lab hrs. — 90 ct. hrs.

EVT 107 Introduction to OSHA-COSH . . . . . 3 cr. hrs.
Overview of the Occupatonal Safety and Health Act of 1970 with emphasis on rights and responsibilities of employer/employee and standards along with information on hazards, citation, penalties, abatement, Federal register and record keeping.
45 hrs. theory — 45 ct. hrs.

EVT 108 Solid Waste Pollution . . . . . 5 cr. hrs.
An in-depth study of sources of solid waste and the problems such pollution causes relative to land use, water and people. Traditional, new and experimental methods of control and abatement will be identified. Methods of sewage treatment will also be studied. Field trips will be taken to sanitary landfill and garbage dump facilities and wastewater treatment plants to observe both poor and good practices, relative to solid waste disposal.
45 hrs. theory - 45 hrs. lab — 90 ct. hrs.

EVT 109 Water Pollution . . . . . 5 cr. hrs.
Identification of the chemical, physical, biological and social causes of water pollution. The course will describe how people pollute their streams, lakes and other bodies of water, the effects of this pollution on humans, wildlife and vegetation. Legislation and technology aimed at minimizing or stopping such pollution will also be discussed. Field trips will be included.
45 hrs. theory - 45 hrs. lab — 90 ct. hrs.

EVT 200 Environmental Decision Making . . . . . 4 cr. hrs.
A course designed to help the student become acquainted with techniques involved in environmental decision making, including ecological, social, economic and cultural considerations. The concept of the Environmental Impact Statement required by Federal law will be explored, along with case studies of actual environmental impact statements developed by various entities. Integration of project management techniques and the evaluation of actual development proposals from neighboring communities will be included in the course.
60 hrs. theory — 60 ct. hrs.

EVT 205 Land Use and the Quality of Life . . . . . 7 cr. hrs.
This course brings together the various facets of the Environmental Technology Program and relates them to the broader concept of land use. The student will gain an awareness of municipal government and citizen processes involved in the local land use decision making system that occurs in every municipality throughout the land. Integration of project management techniques and the evaluation of actual environmental impact development proposals from local communities will be included in the course.
60 hrs. theory - 68 hrs. lab — 128 ct. hrs.

EVT 206 Industrial Hygiene . . . . . 3 cr. hrs.
The science of recognizing, evaluating and controlling health hazards, including safety, in industry will be studied. Included in the course will be a description of techniques involved in collecting and analyzing airborne contaminants, radiation, and physical hazards, such as noise and heat stress. Students will also become familiar with the various types of industrial hygiene sampling equipment. Field trips will be taken to observe and become familiar with industrial process which present potential health hazards.
45 hrs. theory — 45 ct. hrs.

EVT 207 Atmospheric Pollution . . . . . 7 cr. hrs.
Sources and classification of air pollutants, effects upon public health as well as upon plant life and man-made materials, present technological methods of control and future alternative solutions. Pollution and weather and descriptions of sampling and measurement techniques will also be covered. Field trips will be taken to observe technological controls now employed and equipment used to detect and analyze air pollutants.
60 hrs. theory - 68 hrs. lab — 128 ct. hrs.

EVT 208 Pollution Control Systems . . . . . 4 cr. hrs.
Hydraulic, pneumatic, mechanical, electrical and electronic control systems and components. Basic description, analysis and explanation of operation. Typical performance characterisitcs, limitations on performance, accuracy, application and their utilization in industrial processes.
60 hrs. theory — 60 ct. hrs.

EVT 209 Data Collection Techniques & Evaluation . . . . . 3 cr. hrs.
Basic principles of sampling; survey designs, systems of sampling; methods of estimation; problem definition, evaluation of information collected; organization and preparation of reports including techniques of collecting, interpreting and presenting information useful in Environmental Technology.
45 hrs. theory — 45 ct. hrs.

EVT 210 Data Processing for Environmental Tech. . . . . 3 cr. hrs.
Effective use of automatic equipment necessary to meet the information needs of Environmental Technology. Study of the basic data processing concepts and procedures including management information systems, the hardware and software necessary for system implementation and intra-firm and agency coordination.
45 hrs. theory — 45 ct. hrs.

EVT 215 Pictorial Drafting . . . . . 3 cr. hrs.
Problems involving the construction, layout, and rendering of pictorial illustrations of a technical nature, including exploded assemblies and assembled sections, using axonometric, and perspective project.
45 hrs. theory 45 ct. hrs.

EVT 216 Environmental Law . . . . . 3 cr. hrs.
An introduction to the legal basis for Environmental Technology including such topics as the basic court cases and Federal laws which delineate the environmental control, the state legislation and a review of local jurisdiction ordinance forms. This is followed by a review of the process which is required for the passage of new state and local laws.
45 hrs. theory 45 ct. hrs.

EVT 217 Map Reading and Photo. Interpretation. . . . . 3 cr. hrs.
Interpretation and information gathering from maps and aerial photos. Use and application of black and white and color photos. Final project will be an evaluation of an area for specific proposal.
45 hrs. theory 45 ct. hrs.

EVT 218 Pests and Pesticides . . . . . 5 cr. hrs.
This course includes the study of those parasites which produce disease with particular reference to the human host and those animals and arthropods that are important in the transmission of disease.
45 hrs. theory - 45 hrs. lab 90 ct. hrs.

EVT 297 Cooperative Work Experience/ Practical Training . . . . . 1-6 cr. hrs.
The student is assigned to a local environment department and is given duties related to the Environmental Tech. degree program. This practical training program is supervised and coordinated by a College instructor. The student works with an experienced pre-selected supervisor on the job who will grade his/her performance according to College standards. Regular school class attendance is required by all students participating in the course.
45-270 hrs. coop. 45-270 ct. hrs.

EVT 299 Independent Study . . . . . 2-6 cr. hrs.
The student will study intensively a topic of interest under the direction of a qualified faculty member. The number of credit hours to be allowed for successful completion of the course will be determined cooperatively by the instructor and the Division Director.
45-135 hrs. indep. study 45-135 ct. hrs.

FIRE SCIENCE TECHNOLOGY (R)
Associate Degree Program
Fire Suppression

Completion of this curriculum will prepare individuals for entry in a Fire Protection Career. This option places emphasis on modern methods of suppression and management of Fire Protection.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
FST 100	Fire Protection	3	45
FST 105	Fire Apparatus and Equipment	3	45
FST 106	Fire Prevention	3	45
FST 107	Related Codes and Ordinances	3	45
FST 108	Fire Hydraulics	4	68
FST 109	Building Plans and Construction	3	45
FST 141	Automatic Extinguishing Systems	3	45
FST 142	Automatic Detection/ Alarm Systems	3	45
FST 215	Strategy and Tactics	3	45
FST 216	Rescue Procedures	3	45
FST 217	Operating and Driving Procedures	4	68
FST 218	Fire Service Management	3	45
FST 286	OSHA/COSH for Fire Protection	3	45
* FST 297	Coop. Work Experience/ Practical Training Course	4	180
FST 299	Independent Study	6	135
		55	969

*NOTE: Individuals not employed in the Suppression field will be required to enroll for a minimum of 4 credit hours of cooperative work experience. Individuals employed in the Suppression field may substitute an additional major course.

Required Related Courses

Mathematics (MAT 111)	3	45
Chemistry (CHE 101)	3	45
Physics (PHY 101)	3	45
English (ENG 111)	3	45
	12	180
TOTAL REQUIRED HOURS	67	1149

Additional Major Courses

FST 225	Fire Lieutenant	3	45
FST 226	Fire Command Officers School	1	15
FST 227	Emergency Medical Technician	4	60
FST 228	Underwater Recovery	3	45
FST 229	Hazardous Materials Seminar	3	45
FST 230	Aircraft Fire/Rescue	3	45
FST 285	Wild Fire	3	45
FST 287	Automatic Extinguishing Systems-Design	3	45

FIRE SCIENCE TECHNOLOGY (R)
Associate Degree Program
Fire Prevention

Completion of this curriculum will prepare individuals for entry in a Fire Protection Career. Emphasis is placed on Life Safety and protection of buildings using related codes and ordinances.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
FST 100	Fire Protection	3	45
FST 105	Fire Apparatus and Equipment	3	45
FST 106	Fire Prevention	3	45
FST 107	Related Codes and Ordinances	3	45
FST 108	Fire Hydraulics	4	68
FST 109	Building Plans and Construction	3	45
FST 121	Hazardous Materials	4	68
FST 141	Automatic Extinguishing Systems	3	45
FST 142	Automatic Detection/ Alarm Systems	3	45
FST 205	Fire Safety Education	3	45
FST 206	Fire Investigation	3	45

FST 207	Comprehensive Planning for Fire Prot.	3	45
FST 208	Building Inspections for Fire Prot.	3	45
FST 286	OSHA/COSH for Fire Protection	3	45
FST 297	Coop. Work Experience/ Practical Trng.	4	180
FST 299	Independent Study	6	135
		54	991

Required Related Courses

	Mathematics (MAT 111)	3	45
	Chemistry (CHE 101)	3	45
	Physics (PHY 101)	3	45
	English (ENG 111)	3	45
	SPE 101	3	45
		15	225
	TOTAL REQUIRED HOURS	69	1216

Additional Major Courses

FST 225	Fire Lieutenant	3	45
FST 226	Fire Command Officers School	1	15
FST 227	Emergency Medical Technician	40	60
FST 228	Underwater Recovery	3	45
FST 229	Hazardous Materials Seminar	3	45
FST 230	Aircraft Fire/Rescue	3	45
FST 285	Wild Fire	3	45
FST 287	Automatic Extinguishing Systems-Design	3	45

FIRE SCIENCE TECHNOLOGY (R)
Associate Degree Program

FST 100 Fire Protection . . . . . 3 cr. hrs.
History and philosophy of fire protection. Introduction to the fire service and its many facets. Review of the general areas of duties and responsibilities at the fire company level.
45 hrs. theory 45 ct. hrs.

FST 105 Fire Apparatus and Equipment . . . . . 3 cr. hrs.
Types of fire apparatus used in the fire service. Familiarization, operation and uses of the various types of pumps, ladders, aerial platforms, squads and all specialized fire equipment.
45 hrs. theory 45 ct. hrs.

FST 106 Fire Prevention . . . . . 3 cr. hrs.
A course that analyzes the organization and functions of Fire Prevention. Including inspection and survey procedures, recognition of fire hazards. Methods of fire hazard removal and the use of fire safety education to prevent or limit fires and their effects.
45 hrs. theory 45 ct. hrs.

FST 107 Related Codes and Ordinances . . . . . 3 cr. hrs.
This course is designed to acquaint the student with the requirements of the Uniform Building Code and the Uniform Fire Code. The building code covers building structural element requirements, where as, the fire code will cover the requirements for operations and functions that go on within the building.
45 hrs. theory 45 ct. hrs.

FST 108 Fire Hydraulics . . . . . 4 cr. hrs.
Prerequisite: Applied Math.
Review of basic mathematics; hydraulic laws and formulas as applied to the fire service; application of formulas and mental calculation to hydraulic problems; water supply problems; underwriters' requirements for pumps.
45 hrs. theory - 23 lab hrs. 68 ct. hrs.

FST 109 Building Plans and Construction . . . . . 3 cr. hrs.
How to read & understand a working drawing of a structure or a schematic of electric/or fire protection systems. Building construction for the fire fighter means the types of buildings and building materials, the structural stability of them in the fire situation.
45 hrs. theory 45 ct. hrs.

FST 121 Hazardous Materials . . . . . 4 cr. hrs.
A study into the physical and chemical properties of different compounds which render fire fighting abnormally dangerous and hazardous. Emphasis is placed on molecular structures of compounds in identifying their hazardous properties. The different classes of compounds studied are: flammable liquids; compressed gases; cryogenics; flammable solids; water reactive compounds; oxidizers explosives; Class A and B poisons; corrosives; plastics and radioactive materials.
45 hrs. theory - 23 lab hrs. 68 ct. hrs.

FST 141 Automatic Extinguishing Systems . . . . . 3 cr. hrs.
Portable fire extinguishing equipment requirements. Sprinkler systems, types, installation and maintenance and special protection systems for various hazards.
45 hrs. theory 45 ct. hrs.

FST 142 Automatic Detection/ Alarm Systems . . . . . 3 cr. hrs.
An analysis of private protection and alarm systems. Course covers organization and operation of private Fire Brigades, complete water systems layouts. A study and evaluation of Fire Detection, Alarm and Supervisory systems.
45 hrs. theory 45 ct. hrs.

FST 205 Fire Safety Education. . . . . 3 cr. hrs.
This course is structured to enable the student to design and implement a fire safety education program. Media relations, fire safety education through audio-visual aids, promotion of community business support, improvement of citizen-fire fighter communication.
45 hrs. theory 45 ct. hrs.

FST 206 Fire Investigation. . . . . 3 cr. hrs.
Introduction to arson and incendiarism, arson laws, and types of incendiary fires. Methods of determining fire cause, recognizing and preserving evidence, interviewing and detaining witnesses. Procedures in handling juveniles, court procedures and giving court testimony.
45 hrs. theory 45 ct. hrs.

FST 207 Comprehensive Planning for Fire Protection . . . . . 3 cr. hrs.
How to plan and coordinate between separate government agencies on the use of streets, water, and construction in relation to fire prevention and suppression.
45 hrs. theory 45 ct. hrs.

FST 208 Building Inspections for Fire Protection . . . . . 3 cr. hrs.
Emphasis is on inspection techniques, plumbing inspections, electrical inspections, and mechanical inspections relative to the fire protection field.
45 hrs. theory 45 ct. hrs.

FST 215 Strategy and Tactics . . . . . 3 cr. hrs.
Basic fire fighting tactics and strategy; methods of attack, preplanning fire problems.
45 hrs. theory 45 ct. hrs.

FST 216 Rescue Procedures . . . . . 3 cr. hrs.
Rescue practices, rescue skills and techniques, rescue tools and equipment with emphasis on auto accident extraction, building collapse, cave-in and landslide and other rescue problem procedures.
45 hrs. theory 45 ct. hrs.

FST 217 Operating and Driving Procedures . . . . . 4 cr. hrs.
A course designed to enable the student to safely maintain, drive, and operate pump and aerial ladder fire apparatus, including maintenance checks, defensive driving, and operating apparatus in the field.
45 hrs. theory - 23 lab hrs. 68 ct. hrs.

FST 218 Fire Service Management . . . . . 3 cr. hrs.
A course that analyzes the organization and functions of public fire departments. Including study of master planning, public budget systems, cost-benefit analysis, management information systems, systems approach and other current administration and management theories.
45 hrs. theory 45 ct. hrs.

FST 225 Fire Lieutenant . . . . . 3 cr. hrs.
This course will prepare the student for promotion to the rank of lieutenant for the Fire Service. Course content will include leadership, personnel relations, management and responsibilities, tactical operations and training methods.
45 hrs. theory 45 ct. hrs.

FST 226 Fire Command Officer School . . . . . 1 cr. hr.
A comprehensive 3 day Command Office Training Seminar and Workshop. Conducted during the summer semester utilizing nationally known speakers in Fire Service Management, Command Strategy and Company Operations.
15 hrs. theory 15 ct. hrs.

FST 228 Underwater Recovery . . . . . 3 cr. hrs.
Study of methods used in underwater search and recovery; psychological and physiological aspects of diving are studied.
45 hrs. theory 45 ct. hrs.

FST 229 Hazardous Materials Seminar . . . . . 3 cr. hrs.
Seminar on transportation accidents and methods of fire suppression/safety precautions used at the scene.
45 hrs. theory 45 ct. hrs.

FST 230 Aircraft Fire/Rescue . . . . . 3 cr. hrs.
Emergency procedures used at the scene of commercial/military aircraft accidents. Use of special firefighting suppression agents.
45 hrs. theory 45 ct. hrs.

FST 285 Wild Fire . . . . . 3 cr. hrs.
The study of uncontrolled fire burning in vegetation, structures and other improvements. Strategy and tactics in controlling wild land fires and prevention methods used by agencies will be included in this course.
45 hrs. theory 45 ct. hrs.

FST 286 OSHA/COSH for Fire Protection . . . . . 3 cr. hrs.
The list of pertinent Federal and state safety and health laws and the enforcement authority given to the Fire Officer, also the technique involved in obtaining voluntary compliance.
45 hrs. theory 45 ct. hrs.

FST 287 Automatic Extinguishing Systems-Design . . . . . 3 cr. hrs.
Background on transposing information from working drawings through field measurements into standard plot plan, interpretation of NFPA standards, fire inspections of commercial/industrial buildings, and hydraulics calculations for water needs of fixed fire protection.
45 hrs. theory 45 ct. hrs.

FST 297 Cooperative Work Experience/ Practical Training . . . . . 4 cr. hrs.
The student is assigned to a local area fire department and is assigned fire department duties related to his Fire Science Technology Degree Program. This Practical Training Program is supervised and coordinated by his College instructor. He will work with an experienced pre-selected fire department officer who will grade his performance according to College standards. Regular school attendance is required by all students participating in this course.
180 hrs. coop. 180 ct. hrs.

FST 299 Independent Study . . . . . 6 cr. hrs.
This course provides opportunity for a student to study intensively a specific topic of interest under the direction of a qualified faculty member. Permission to enroll for independent study must be obtained from the assigned instructor.
135 hrs. independent study 135 ct. hrs.

FOOD SERVICE AND MANAGEMENT (N)

Certificate or Associate Degree

This program provides entry level and upgrading training for students to gain knowledge to prepare and manage in the Hospitality Industry.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
FSM 105	Sanitation, Safety, Tools, and Equipment	3	60
FSM 110	Pantry Station Work Duties	3	60
FSM 115	Basic Baking & Fry Cook Duties	3	60
FSM 120	Volume Food Preparation & Service	3	60
FSM 125	Volume Food Production I	3	60
FSM 130	Meat Identity & Cookery	3	60
FSM 135	Short Order Cook Station Duties	3	60
FSM 140	Volume Food Display & Production	3	60
FSM 145	First Cook Station Duties	3	60
FSM 150	Food Production II	3	60
FSM 197	Cooperative Work Experience	4	150
FSM 205	Intro to Food & Beverage Operation, Supervision & Management	3	45
FSM 210	Sales Control Accountability Calculation & Bookkeeping Fundamentals	3	45
FSM 215	Personnel, Labor Relations & Supervision	3	45
FSM 220	Menus & Their Operational Implications	3	45
FSM 225	Operational Security, COSH, Sanitation	3	45
FSM 230	Marketing, Merchandising, Public Relations	3	45
FSM 235	Purchasing & Stock Record Control	3	45
FSM 240	Accounting Systems & Management Controls	3	45
FSM 245	Planning & Layout of Food Facilities & Equipment	3	45
FSM 250	Operational Mgmt. Responsibilities	3	45
FSM 297	Cooperative Work Experience	4	150
DIT 105	Basic Nutrition	2	30
		70	1380

Required Related Courses

Required related Courses for Associate Degree — selection of 8 semester credits from the following support

Divisions. 2 semester hrs. of the 8 hrs. must be English which is required for an Associate Degree.

	Communication & Arts	
	Science & Math	
	Social Science 9	135
	79	1515

Additional Major Courses

FSM 155	Advanced Production	3	60
FSM 156	Specialized Food and Convenience Foods	3	60
FSM 157	Beverage Service	3	60
FSM 158	Hospitality & Service	3	60
FSM 255	Specifics of Food Purchasing Management	3	45
FSM 256	Specifics of Food Operations Management	3	45
FSM 257	Specifics of Food Personnel Management	3	45
FSM 258	Catered Function Management	3	45

FOOD SERVICE (N)

FSM 105 Sanitation, Safety, Tools and Equipment (N) . . . . . 3 Cr. Hrs.
A course dealing with the fundamentals of Commercial Food Service Laws, rules, and regulations on Sanitation and Safety and how these apply to the tools and equipment facilities and personnel of the industry.
15 Hrs. Theory - 45 Lab 60 Ct. Hrs.

FSM 110 Pantry Station Work Duties (N) . . . . . 3 Cr. Hrs.
Prerequisite or concurrent Math 100. Proficiency in FSM 105 or equivalent.
Emulsions, salad dressings, gelatins, components of various types of salads, techniques of sandwich production, beverages and other duties found in different pantry stations throughout the Food Service Industry.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 115 Basic Baking & Fry Cook Duties (N) . . . . . 3 Cr. Hrs.
Prerequisite: Proficiency in FSM 105 and FSM 110 or equivalent.
Study and use of the various types of flours, leavening agents, fillings, icings, and production of breads and pastries. Fresh, frozen and convenience products are studied. The Fry Cook duties of deep fat frying, egg cookery, and vegetable cookery are introduced.
15 Hrs. Theory - 45 Lab 60 Ct. Hrs.

FSM 120 Volume Food Preparation and Service (N) . . . . . 3 Cr. Hrs.
Prerequisite: Proficiency in FSM 105, FSM 110, FSM 115, or equivalents.
This includes planning meals, table count and cafeteria service. Basic stocks, sauces, secondary sauces, gravies, independent production and casserole cookery is stressed.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 125 Volume Food Production I (N) . . . . . 3 Cr. Hrs.
Prerequisite or concurrent Basic Oral Communication. Proficiency in FSM 105, FSM 110, FSM 115, FSM 120, or equivalents.
Meat cookery is started and volume food production is introduced through the application of previous class studies. Laboratory experience is stressed.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 130 Meat Identity and Cookery (N) . . . . . 3 Cr. Hrs.
Prerequisite: Proficiency in FSM 105, FSM 110, FSM 115, FSM 120, FSM 125, FSM 130 or equivalents.
This course gives an in-depth study of meat products from purchasing through preparation to include various methods of meat cookery and soy protein additives.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 135 Short Order Cook Station Duties (N) . . . . . 3 Cr. Hrs.
Prerequisites: Basic Written Communication, proficiency in FSM 105, FSM 110, FSM 115, FSM 120, FSM 125, FSM 130, or equivalents.
Breakfast preparation items and duties often delegated under the heading of short order cook are studied and practiced including Broiler and Grill cooking.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 140 Volume Food Display & Production (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 105, FSM 110, FSM 115, FSM 120, FSM 125, FSM 130, FSM 135, or equivalents.
Poultry, game, and fish preparation and service along with cookery are studied and applied here. Proficiency and advancement of Quantity Food Production is practiced.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 145 First Cook Station Duties (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 105, FSM 110, FSM 115, FSM 120, FSM 125, FSM 130, FSM 135, FSM 140 or equivalents.
This course expands terminology, planning, costing and production with emphasis on employee relationship of one department to another for effective and profitable kitchen production. The student will become familiar with catering, and other special food service needs.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 150 Food Production II (N) . . . . . 3 Cr. Hrs.
Prerequisites: DIT 105 Basic Nutrition. Proficiency in FSM 105, FSM 110, FSM 115, FSM 120, FSM 125, FSM 130, FSM 135, FSM 140, FSM 145 or equivalents.
The student performs through lab work assignments, utilizing both theory and techniques started in previous food courses. Students complete areas where proficiency was lacking. Demonstrates his or her best food production skills and ability to work independently.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 155 Advanced Production (N) . . . . . 3 Cr. Hrs.
Advanced techniques in production will be studied in this course.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 156 Specialized Food and Convenience Foods (N) . . . . . 3 Cr. Hrs.
Refresher and promotional production for advanced kitchen workers.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 157 Beverage Service (N) . . . . . 3 Cr. Hrs.
The student will gain ability to function as operator of the alcoholic beverage area of a hospitality industry business from procurement of product through preparation and service to the final accountability of sales and commodity.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 158 Hospitality and Service (N) . . . . . 3 Cr. Hrs.
The student will demonstrate awareness of all facets of the service aspects of Food and Beverage Sales in the Hospitality industry as to needs and responsibilities within all organizations from fountain-luncheonette through those offering tableside cart cooking or French type service.
15 Hrs. Theory - 45 Hrs. Lab 60 Ct. Hrs.

FSM 197 Cooperative Work Experience (N) . . . . . 4 Cr. Hrs.
Prerequisites for enrollment in FSM 197 are permission of the instructor and approval of the Division Director.
A basic course provided through a cooperative arrangement between the college and an employing agency. Through this course the student will have an opportunity to become more proficient in basic skills or special skills directly related to a specific job entry goal. 1 hour per week in class.
15 Hrs. Theory - 135 Hrs. Lab 150 Ct. Hrs.

FSM 205 Introduction to Food & Beverage Operation, Supervision & Management (N) . . . . . 3 Cr. Hrs.
Prerequisites: FSM 100 Series and supports or equivalents.
The student will understand basics of Food Service Management and its functions in overall operation of Food and Beverage services in Hospitality Industry.
45 Hrs. Theory 45 Ct. Hrs.

FSM 210 Sales Control Accountability, Calculation & Bookkeeping Fundamentals (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205 or equivalents.
The student will gain practice in and familiarity with the methods of accounting for and controlling cash income and the application and use of mathematics and bookkeeping procedure as it applied to Food and Beverage operations.
45 Hrs. Theory 45 Ct. Hrs.

FSM 215 Personnel, Labor Relations, and Supervision (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205 and FSM 210 plus required Psychology course concurrent or equivalents.
The student will understand methods and reasons for suitable recruiting, selecting, training and motivating the proper staffing of employees in hospitality industry. Also, the effect of labor relation negotiations and contracts on the operations and supervision of the work force.
45 Hrs. Theory 45 Ct. Hrs.

FSM 220 Menus and Their Operational Implications (N). . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205, FSM 210, FSM 215, or equivalents.
The student will gain proficiency in developing, through analytic planning and determination of customer desires, menus within constraints of allowed costs, required nutrition, desirable color and texture, and available staff and equipment limitations, as well as mechanical confines, through programmed lab experience.
45 Hrs. Theory 45 Ct Hrs.

FSM 225 Operational Security, C.O.S.H., Sanitation (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205, FSM 210, FSM 215, FSM 220 or equivalents.
The student will gain an understanding of basic management attitudes and policies for employee cooperation in control areas of preventing pilferage, theft and other losses. Also, will become familiar with regulations concerning Occupational Health, Safety and Sanitation.
45 Hrs. Theory 45 Ct. Hrs.

FSM 230 Marketing, Merchandising and Public Relations (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205, FSM 210, FSM 215, FSM 220, FSM 225 or equivalents.
The student will understand needs of marketing surveys and resultant merchandising requirements. The planning as well as evaluation of results and the effect of hospitality establishment relations within the industry, area and the consuming public.
45 Hrs. Theory 45 Ct. Hrs.

FSM 235 Purchasing & Stock Record Control Management (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205, FSM 210, FSM 215, FSM 220, FSM 225, FSM 230 or equivalents.
The student will become familiar with means of determining quality and other standard levels of purchased items. The emphasis will be on feasibility of need, methods of, and control in purchasing and accounting for purchased items.
45 Hrs. Theory 45 Ct. Hrs.

FSM 240 Accounting Systems & Management Controls (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205, FSM 210, FSM 215, FSM 220, FSM 225, FSM 230, FSM 245, or equivalents.
The student will gain practice in construction and analysis of control systems for all areas of cost expenditures, income and financial statements as they influence hospitality service.
45 Hrs. Theory 45 Ct. Hrs.

FSM 245 Planning and Layout of Food Facilities & Equipment (N) . . . . . 3 Cr. Hrs.
Prerequisites: Proficiency in FSM 205, FSM 210, FSM 215, FSM 220, FSM 225, FSM 230, FSM 235, FSM 240 or equivalents.
The student will develop an awareness of methods for determining required facilities, equipment and other physical plant needs, including costs both original and ongoing, while considering such factors as maintenance and purchase or lease decisions.
45 Hrs. Theory 45 Ct. Hrs.

FSM 250 Operational Management Responsibilities (N). . . . . 3 Cr. Hrs.
Prerequisite: FSM 210, FSM 215, FSM 220, FSM 225, FSM 230, FSM 235, FSM 240, FSM 245, or equivalents.
The student will gain understanding in intergroup relationship with others in organization of hospitality industry — opportunity will be available to define individual tasks and reinforce practical application of previously studied areas. A general rounding out experience utilizing skills gained throughout entire program. A total review of all techniques in preparation for job entry.
45 Hrs. Theory 45 Ct. Hrs.

FSM 255 Specifics of Food Purchasing Management (N) . . . . . 3 Cr. Hrs.
This course is designed for students having previous work experience in a particular major field of Food Purchasing Management in a specific area of the hospitality industry and will serve to reinforce their practical experience and enable them to gain proficiency or enhance job knowledge in the better methods of accomplishing their task.
45 Hrs. Theory 45 Ct. Hrs.

FSM 256 Specifics of Food Operations Management (N) . . . . . 3 Cr. Hrs.
This course is designed for students having previous work experience in a particular major field of Food Operations Management in a specific area of the hospitality industry and will serve to reinforce their practical experience and gain proficiency or enhance job knowledge in the better methods of accomplishing their task.
45 Hrs. Theory 45 Ct. Hrs.

FSM 257 Specifics of Food Personnel Management (N) . . . . . 3 Cr. Hrs.
This course is designed for students having previous work experience in a particular major field of Food Operations Personnel Management in a specific area of the Hospitality Industry and will serve to reinforce their practical experience and enable them to gain proficiency or enhance job

knowledge in the better methods of accomplishing their task.
45 Hrs. Lecture 45 Ct. Hrs.

FSM 258 Catered Function Management (N) . . . . . 3 Cr. Hrs.
The student will become familiar with equipping, staffing, transporting needs, sanitation and other requirements as well as business and operational areas in profitable catering businesses for on and off permise functions including private parties.
45 Hrs. Theory 45 Ct. Hrs.

FSM 297 Cooperative Work Experience (N) . . . . . 4 Cr. Hrs.
Prerequisites for enrollment in FSM 297 are permission of the instructor and approval of the Division Director.
The student is placed at a work station, in the Metropolitan Denver area, which is related to his educational program and occupational objective. He works under the immediate supervision of experienced personnel at the business, industry, or agency involved, with a college instructor providing general coordination. One hour a week in class.
15 Hrs. Theory - 135 Hrs. Lab 150 Ct. Hrs.

GERONTOLOGY/GERIATRICS & ACTIVITIES DIRECTING (A)
Associate Degree
(This program has not yet been approved by the appropriate agencies.)

Training in this program will give a person entry level skills. Contact your counselor if you wish to design a program with specialization in the following: Gerontology/Geriatrics Research Assistant, Para-Professional Gerocomist, or Activity Director.

Required Major Courses

Course No.	Title	Cr. Hrs.	
GGA 100	Introduction to Studies of Aging	3	45
GGA 101	Physical, Psychological and Social Implications of Aging I	5	75
GGA 102	Activities Directing for Senior Citizens I	3	45
GGA 105	Nutrition for the Elderly	4	60
GGA 107	Emergency Procedures and Professional Relationships	3	52
GGA 108	Voluntarism	3	52
GGA 109	Activities of Daily Living	3	52
GGA 112	Activities Directing for Senior Citizens II	5	90
GGA 200	Social Gerontology	5	75
GGA 206	Behavioral Disorders and Emotional Care of Senescent	2	30
GGA 208	Home Management Seminar	3	45
GGA 209	Reality Orientation and Remotivation	3	45
GGA 211	Physical, Psychological and Social Implications of Aging II	5	75
GGA 219	Disability and Rehabilitation	5	90
GGA 222	Activities Directing for Senior Citizens III	5	90
		57	921

Required Related Courses

COM 107	Occupational Communication	3	45
PSY 100	Human Relations in Business and Industry	3	45
PSY 225	Psychology of Death and Dying	3	45
REL 215	Recreational Equipment and Facilities	3	45
REL 216	Recreation in Special Setting	2	30
		14	210
	TOTAL REQUIRED HOURS	71	1131

Additional Major Courses

GGA 210	Theory and Method of Research on Aging	5	90
GGA 215	Retirement and Independent Maturity	4	60
GGA 232	Activity Director's Workshop	3	45
GGA 235	Living Nutrition for the Elderly and Meal Preparation	3	60

GEROTOLOGY/GERIATRICS & ACTIVITIES DIRECTING (A)
Associate Degree

GGA 100 Introduction to Studies of Aging. . . . . 3 Cr. Hrs.
This course is to provide the student with correct concept and basic understanding of aging process. Problems which may occur in later years with possible solutions and prevention are discussed.
45 Hrs. Theory 45 Ct. Hrs.

GGA 101 Physical, Psychological and Social Implications of Aging I . . . . . 5 Cr. Hrs.
Prerequisite: GGA 100 Introduction to Studies of Aging
This course is designed to provide the student with a better understanding of the physical, psychological and social implications in the aging process. Successful alleviation of behavioral deficit of aged by environmental intervention and biofeedback technique to affect physiological decline of elderly, thus possible retardation and reversal of aging process are included. Also included are basic studies of structure, function, and metabolisms of human body and technical terms Gerontologist, Geratrician and Activities Director should know.
30 Hrs. Theory - 45 Hrs. Lab 75 Ct. Hrs.

GGA 102 Activities Directing for Senior Citizens I . . . . . 3 Cr. Hrs.
Planning and conducting meaningful recreational activities that meet the needs and interests of senior citizens, that are adapted to their physical limitations and contribute to their adjustment to the home.
45 Hrs. Theory 45 Ct. Hrs.

GGA 105 Nutrition for the Elderly . . . . . 4 Cr. Hrs.
A study of the essential nutrients and their values in various food groups; dietary requirement of aging and aged; metabolism and absorption; effect of deficiencies; influence on sex and age level; under-nutrition; over-nutrition; geratric illnesses and diet therapy; etc.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

GGA 107 Emergency Procedures and Professional Relationships. . . . . 3 Cr. Hrs.
A study of professional measures common to the gerokomic (pertaining to the care of aged) occupation; emergency procedures; microbiology and asepsis, legal and ethical implication for the gerokomist.
21 Hrs. Theory - 31 Hrs. Lab 52 Ct. Hrs.

GGA 108 Voluntarism . . . . . 3 Cr. Hrs.
A course designed to assist the student to become aware of the needs and services to the elderly that must be met through voluntary help. Emphasis will be placed on community interaction with the elderly and for the elderly to

render and receive service.
21 Hrs. Theory - 31 Hrs. Lab 52 Ct. Hrs.

GGA 109 Activities of Daily Living . . . . . 3 Cr. Hrs.
Procedures that relate to the Activities for Daily Living, awareness of range of motion mechanics that are utilized in rehabilitation to the maximum potential of the individual.
21 Hrs. Theory - 31 Hrs. Lab 52 Ct. Hrs.

GGA 112 Activities Directing for Senior Citizens II . . . . . 5 Cr. Hrs.
Prerequisite: GGA 102 Activities Directing for Senior Citizens I.
A course of study covering the fundamental skills, methods and materials used in arts and craft projects for a variety of recreational and therapeutic purposes. The student will have practical experiences in planning and directing activities.
36 Hrs. Theory - 54 Hrs. Lab 90 Ct. Hrs.

GGA 200 Social Gerontology . . . . . 5 Cr. Hrs.
The problems and implications of aging and society, etiology of the problems and the emergent social reforms for meeting the critical needs of the aged in the 20th century.
75 Hrs. Theory 75 Ct. Hrs.

GGA 206 Behavioral Disorder and Emotional Care of Senescent . . . . . 2 Cr. Hrs.
Causes, description and theory of behavioral disorders of senescent and emotional psychological care of aged.
30 Hrs. Theory 30 Ct. Hrs.

GGA 208 Home Management Seminar . . . . . 3 Cr. Hrs.
A seminar for senior citizens, their families or individuals who work with or for them during varying family and life cycles. Budgeting and consumerism are included.
45 Hrs. Seminar 45 Ct. Hrs.

GGA 209 Reality Orientation and Remotivation . . . . . 3 Cr. Hrs.
This course is designed to provide the student with the knowledge of an effective means of assisting the individual in everyday living. Both the team concept and the classroom concept will be covered. Remotivation assists the individual in coping with today's world through a technique of group interaction.
45 Hrs. Theory 45 Ct. Hrs.

GGA 210 Theory and Method of Research on Aging . . . . . 5 Cr. Hrs.
This course is designed to provide the student with basic principle and theory of research technique, methods of investigation and analysis, and evaluation. Emphasis is placed on demographic researchers on aging.
36 Hrs. Theory - 54 Hrs. Lab 90 Ct. Hrs.

GGA 211 Physical, Psychological and Social Implication of Aging II . . . . . 5 Cr. Hrs.
Prerequisite: GGA 101 Physical, Psychological and Social Implication of Aging I.
This course is a continuation of GGA 101, designed to provide the students further understanding and in-depth application to the physical, psychological, and social implications in the aging process.
30 Hrs. Theory - 45 Hrs. Lab 75 Ct. Hrs.

GGA 215 Retirement and Independent Maturity . 4 Cr. Hrs.
Adequate preparation for retirement, effective use of time, health and nutritional concern, legal problems, housing and many other subjects are considered to help mature men and women maintain a life of dignity, independence and purpose.
60 Hrs. Theory 60 Ct. Hrs.

GGA 219 Disability and Rehabilitation . . . . . 5 Cr. Hrs.
A scientific approach to the study of ways in which disabled and infirm can rehabilitate. The principles of work simplification and methods are included.
36 Hrs. Theory - 54 Hrs. Lab 90 Ct. Hrs.

GGA 222 Activities Directing for Senior Citizens III . . . . . 5 Cr. Hrs.
Prerequisite: GGA 102 Activities Directing for Senior Citizens I. GGA 112 Activities Directing for Senior Citizens II.
This course is a continuation of GGA 112, designed to provide the student with practical job related training in the nursing home and/or community.
90 Hrs. Job Related Training 90 Ct. Hrs.

GGA 232 Activity Director's Workshop . . . . . 3 Cr. Hrs.
A workshop which may be used by Activities Directors or others who wish to meet requirements for upgrading or licensing.
45 Hrs. Theory 45 Ct. Hrs.

GGA 235 Living Nutrition for the Elderly and Meal Preparation . . . . . 3 Cr. Hrs.
A course concentrated on practical use of knowledge and sensible approach to meal preparation for the elderly and dieters. A study of the essential nutrients and their values. Geratric illness and diet therapy are included.
24 Hrs. Theory - 36 Hrs. Lab 60 Ct. Hrs.

HOTEL MOTEL OPERATIONS (A)
Associate Degree

This program is designed to train new workers for the job entry level as well as up grade and retrain present employees for the Hotel Motel Industry. The program places emphasis on the mid-management aspect of the Hotel Motel Industry.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
HMO 100	Introduction to Hotel Motel Operations	2	30
HMO 105	Basic Bookkeeping for Hotels and Motels	4	75
HMO 108	Hotel Motel Organization and Administration	3	45
HMO 109	Motel/Motor Hotel Management	2	30
HMO 116	Training and Coaching Techniques	3	45
HMO 117	Front Office Procedures	4	75
HMO 118	Food and Beverage Purchasing	3	53
HMO 119	Supervisory Housekeeping	4	75
HMO 120	Supervisory Development	2	30
HMO 205	Hotel Motel Accounting for Management I	4	65
HMO 206	Hotel Motel Sales	3	45
HMO 207	Hotel Motel Law	3	45
HMO 208	Food and Beverage Management and Service	2	30
HMO 209	Maintenance and Engineering	3	53
HMO 215	Food and Beverage Control	3	53
HMO 297	Job Related Work Experience or approved elective as listed under Additional Major Courses	24	260
		69	1009

Required Related Courses

English Elective	3	45
Math Elective	3	45
Psychology Elective	3	45

ACC 109	Bookkeeping and Accounting	5	75
		14	210
		83	1219

Additional Major Courses

HMO 106	Foodservice Administration for Health Care Facilities	2	32
HMO 107	Basic Sanitation for Foodservice Employees in the Hotel/Motel Field	2	35
HMO 110	Human Relations in the Hotel Motel Field	2	30
HMO 125	Waitress and Bartending	3	60
HMO 126	Laundry Training for Hotels and Motels	3	60
HMO 210	Advanced Sanitation in Hotel/Motel Foodservice Operations	2	38
HMO 216	Marketing of Hospitality Services	2	30
HMO 217	Hotel/Motel Property Management	2	30
HMO 299	Independent Study	3-6	60-120

HOTEL MOTEL OPERATIONS (A)

HMO 100 Introduction to Hotel Motel Operations . . . . . 2 Cr. Hrs.
Traces the growth and development of the lodging industry from early Inns to modern high rise and commercial Hotels and highway Motels. It also reviews the organization of Hotel operations and covers the opportunities and future trends in the industry.
30 Hrs. Theory 30 Ct. Hrs.

HMO 105 Basic Bookkeeping for Hotels and Motels . . . . . 4 Cr. Hrs.
Provides a basic knowledge of bookkeeping skills and an orientation to Hotel and Motel accounting methods.
30 Hrs. Theory - 45 Hrs. Lab 75 Ct. Hrs.

HMO 106 Foodservice Administration for Health Care Facilities . . . . . 2 Cr. Hrs.
An indepth treatment of the problems unique to hospitals and extended care facilities. The course covers a total approach to this special area of foodservice in the hospitality industry.
26 Hrs. Theory - 6 Hrs. Lab. 32 Ct. Hrs.

HMO 107 Basic Sanitation for Foodservice Employees in the Hotel Motel Field . . . . . 2 Cr. Hrs.
Details the fundamentals of sanitation for foodservice employees; covers practical guidance in safe food handling and stresses the scientific principles underlying good sanitation practices.
30 Hrs. Theory - 15 Hrs. Lab. 35 Ct. Hrs.

HMO 108 Hotel Motel Organization and Administration . . . . . 3 Cr. Hrs.
Analyzes management's functions and responsibilities in such areas as administration, organization, communications, accounting personal and human relations.
45 Hrs. Theory 45 Ct. Hrs.

HMO 109 Hotel/Motor Hotel Management . . . . . 2 Cr. Hrs.
Covers the development and nature of the Motel/Motor Hotel business including sales promotion, guest relations, guest room facilities, space utilization, food and beverage facilities, accounting records and financial considerations as well as administrative controls.
30 Hrs. Theory 30 Ct. Hrs.

HMO 110 Human Relations in the Hotel/Motel Field . . . . . 2 Cr. Hrs.
Provides an introduction to the principles of effective human relations required by today's Hotel Motel supervisors, and offers a basic knowledge of behavior and suggests ways to channel behavior to achieve worthwhile purposes.
30 Hrs. Theory 30 Ct. Hrs.

HMO 116 Training and Coaching Techniques . . . . . 3 Cr. Hrs.
Covers the development of supervisory skills needed to train employees and devise economical and efficient work methods. Job description, job performance standards, training, motion economy, coaching interview, counseling and organizing for action are also discussed.
45 Hrs. Theory 45 Ct. Hrs.

HMO 117 Front Office Procedures . . . . . 4 Cr. Hrs.
Introduces front office principles required in today's lodging operations and presents practical problems to enhance the learner's knowledge of front office operations.
30 Hrs. Theory - 45 Hrs. Lab. 75 Ct. Hrs.

HMO 118 Food and Beverage Purchasing: . . . . . 3 Cr. Hrs.
This course explains the purchasing criteria and guidelines for the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages.
30 Hrs. Theory - 23 Hrs. Lab. 53 Ct. Hrs.

HMO 119 Supervisory Housekeeping . . . . . 4 Cr. Hrs.
Provides an introduction to the fundamentals of housekeeping management, stressing employee training, record keeping, health and safety, cost control and executive responsibilities.
30 Hrs. Theory - 45 Hrs. Lab. 75 Ct. Hrs.

HMO 120 Supervisory Development . . . . . 2 Cr. Hrs.
Describes the areas of supervisory concepts and practices, the mutual expectations of workers and management, hiring, training, coaching, counseling and other qualities important in providing the necessary leadership and guidance of workers.
30 Hrs. Theory 30 Ct. Hrs.

HMO 125 Waitress and Bartending . . . . . 3 Cr. Hrs.
Students learn how to make mixed drinks and hor d'oeuvres and how to serve them to guests as well as controls of food and beverages.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HMO 126 Laundry Training for Hotels and Motels . . . . . 3 Cr. Hrs.
Knowledge of housekeeping functions in the laundry area within the Hotel Motel Field.
15 Hrs. Theory - 45 Hrs. Lab. 60 Ct. Hrs.

HMO 205 Hotel Motel Accounting for Management I . . . . . 4 Cr. Hrs.
Covers the accounting concepts and techniques necessary for Managerial decision making.
50 Hrs. Theory - 15 Hrs. Lab. 65 Ct. Hrs.

HMO 206 Hotel Motel Sales . . . . . 3 Cr. Hrs.
Shows how to develop a marketing plan for any size operation and shows how to tie all of the departments of a Hotel operations into a coordinated team. The organization and functioning of a sales department, sales tools, techniques, advertising and types of markets are emphasized.
45 Hrs. Theory 45 Ct. Hrs.

HMO 207 Hotel Motel Law . . . . . 3 Cr. Hrs.
Creates an awareness of the responsibilities and rights which the law imposes upon and grants to the innkeeper, and illustrates the consequences caused by failure in those responsibilities. The attitude of the courts toward an innkeeper involved in litigation is also discussed.
45 Hrs. Theory 45 Ct. Hrs.

HMO 208 Food and Beverage Management and Service. . . . . 2 Cr. Hrs.
Provides a basic understanding of the principles of food production and service management, reviewing sanitation, menu planning, controls of costs and labor, and purchasing, storage and merchandising of food and beverages.
30 Hrs. Theory 30 Ct. Hrs.

HMO 209 Maintenance and Engineering . . . . . 3 Cr. Hrs.
Examines the organization of the maintenance and engineering function and provides the technical information necessary to establish effective prevention programs, as well as maintenance procedures.
30 Hrs. Theory - 23 Hrs. Lab. 53 Ct. Hrs.

HMO 210 Advanced Sanitation in Hotel Motel Foodservice Operations . . . . . 2 Cr. Hrs.
Provides an advanced study in the field of sanitation. Describes the significance of sanitation in foodservice and provides the practical knowledge needed to implement a sanitation program in any foodservice facility.
15 Hrs. Theory - 23 Hrs. Lab. 38 Ct. Hrs.

HMO 215 Food and Beverage Control . . . . . 3 Cr. Hrs.
Outlines the essential principles and procedures of effective food and beverage control and emphasizes calculation of food costs, standards and planning.
30 Hrs. Theory - 23 Hrs. Lab. 53 Ct. Hrs.

HMO 216 Marketing of Hospitality Services . . . . . 2 Cr. Hrs.
Applies modern marketing techniques and concepts to the food and lodging industries, including human factors, consumer demand, planning and professional considerations.
30 Hrs. Theory 30 Ct. Hrs.

HMO 217 Hotel Motel Property Management. . . . . 2 Cr. Hrs.
Covers all phases of property management, emphasizing the first impression, staffing, training, capital investments, cost analysis, rentals and renovation.
30 Hrs. Theory 30 Ct. Hrs.

HMO 297 Job Related Work Experience . . . . . 12 Cr. Hrs.
The student is placed at an approved work station which is related to his educational and occupational goals.
20 Hrs. Theory - 240 Hrs Lab. 260 Ct. Hrs.

HMO 299 Independent Study . . . . . 3-6 Cr. Hrs.
This course provides opportunity for a student to study intensively a specific topic of interest under the direction of a qualified faculty member.
15-30 Hrs. Theory - 45-90 Hrs. Lab. 60-120 Ct. Hrs.

INFORMATION MEDIA TECHNOLOGY (A)
LIBRARY MEDIA
Associate Degree

A flexible approach to library employment through educational and occupational skills training. Contact your counselor if you are interested in job preparation in any of the following occupational areas: Library Media Assistant or Library Media Technician.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
IMT 101	Library Public Services A	2	38
IMT 102	Library Public Services B	1	38
IMT 103	Library Technical Services A	2	38
IMT 104	Library Technical Services B	2	38
IMT 111	Library Catalog Services A	2	38
IMT 112	Library Catalog Services B	2	38
IMT 113	Audio Visual Skills A	2	38
IMT 114	Audio Visual Skills B	2	38
IMT 115	Library Reference Skills A	2	38
IMT 116	Library Reference Skills B	2	38
IMT 117	Library Selection Skills C	2	38
IMT 201	Career Plannint	2	45
IMT 202	Technical Supervision	2	45
IMT 215	Library Community Service Seminar A	2	45
IMT 216	Library Community Service Seminar B	2	45
IMT 297	Cooperative Work Experience	2	100
		38	698

Required Related Courses

	English and Communication Elective	6	90
	Electives	6	90
IMT 205	Microfilm Use in Libraries	2	38
IMT 210	Library Technician Research Project	2	45
IMT 211	Library Network Operations	2	38
IMT 213	Library Special Collections	2	38
SEC 101	Typing I	4	75
SEC 102	Typing II	4	75
ACC 109	Bookkeeping & Accounting	2	45
		33	579
	TOTAL REQUIRED HOURS	65	1277

Required Related Courses

Additional Major Courses

IMT 105	Library Use	2	38
IMT 106	Industrial Materials Use	1	25
IMT 107	Science Materials Use	1	25
IMT 108	Health Materials Use	1	25
IMT 109	Business Materials Use	1	25
IMT 120	Introduction to Word Processing	2	38
IMT 145	Records & Information Management	2	38
IMT 146	Records Center Management	2	38
IMT 147	Forms Design & Control	2	38
IMT 149	Procedures Manuals	2	38
IMT 160	Micromedia Skills A	2	38
IMT 161	Micromedia Skills B	2	38
IMT 164	Micromedia Files Management	2	38
IMT 170	Micromedia Production A	2	38
IMT 171	Micromedia Production B	2	38
IMT 201	Career Planning	2	38
IMT 202	Technical Supervision	2	38

IMT 235	Word Processing Management	2	38
IMT 240	Records Management Information Systems	2	38
IMT 246	Forms Management	2	38
*IMT 255	Records Management Seminar A	2	45
*IMT 256	Records Management Seminar B	2	38
IMT 261	Micromedia Center Operations	2	38
IMT 266	Micromedia Information Systems	2	38
*IMT 275	Micromedia Seminar A	2	45
*IMT 276	Micromedia Seminar B	2	45
IMT 281	Data Terminals A	2	38
IMT 282	Data Terminals B	2	38
IMT 291	Technician Certification A	2	40
IMT 292	Advanced Technician Certification B	2	40
IMT 293	Senior Technician Certification C	2	40
IMT 299	Independent Study	2	40

*Student is required to take only records Management **or** Micromedia Seminar course for 4 credit hours total.

INFORMATION MEDIA TECHNOLOGY (A)

IMT 101 Library Public Services. . . . . 2 Cr. Hrs.
Introduction to technician role, library organization and services. Overview of library public relations.
15 Hrs. Theory-23 Hrs. Lab. . . . . 38 Ct. Hrs.

IMT 102 Library Public Services B . . . . . 2 Cr. Hrs.
Practical experience in ready reference and circulation procedures and Interlibrary Loan.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 103 Library Technical Services A . . . . . 2 Cr. Hrs.
Practical exercises in search and verification, ordering and serials ordering and control.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 104 Library Technical Services B. . . . . 2 Cr. Hrs
Practical experience in book repair and book binding; materials preparation and processing.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 105 Library Use . . . . . 2 Cr. Hrs.
Introduces students to libraries and their resources; how to use indexes, card catalogs, and basic reference tools.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 106 Industrial Materials Use. . . . . 1 Cr. Hr.
Introduces handbooks, catalogs, microforms and audio visual formats for Industrial Occupations students.
Independent Study-23 Hrs. Lab. 23 Ct. Hrs.

IMT 107 Science Materials Use . . . . . 1 Cr. Hr.
Review of science information sources to guide students in finding required class information.
Independent Study-23 Hrs. Lab 23 Ct. Hrs.

IMT 108 Health Occupations Materials Use . . . . . 1 Cr. Hr.
Location, identification and use of health and medical resources for nursing and paramedical students.
Independent Study-23 Hrs. Lab. 23 Ct. Hrs.

IMT 109 Business Materials Use . . . . . 1 Cr. Hr.
Introduces business libraries and their resources; location and use of business data for class and work experience.
Independent Study-23 Hrs. Lab. 23 Ct. Hrs.

IMT 111 Library Catalog Services A. . . . . 2 Cr. Hrs.
Introduction to book and non-book descriptive cataloging and preparation of catalog card sets.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 112 Library Catalog Services B. . . . . 2 Cr. Hrs.
Study of subject headings, classification schemes and A.L.A. filing rules, maintenance of shelf lists.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 113 Audio Visual Skills A . . . . . 2 Cr. Hrs.
Operation of projection equipment. Production of transparencies; laminating and dry mounting skills.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 114 Audio Visual Skills B . . . . . 2 Cr. Hrs.
Operation of recording equipment. Lettering skills; posters and graphic production; audio visual presentations.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 116 Library Reference Skills B . . . . . 2 Cr. Hrs.
Study and practical experience with science reference materials. Preparing annotations and answering ready reference questions.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 117 Library Selection Skills. . . . . 2 Cr. Hrs.
Study of selection aids and practical experience in materials selection with emphasis on non-book materials.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 120 Introduction to Word Processing . . . . . 2 Cr. Hrs.
Introduces skills, services, equipment, production and management of word processing, a vital employment skill and management tool.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 145 Records & Information Management . . . 2 Cr. Hrs.
Introduction to records management, records inventory and analysis, personnel and systems.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 146 Records Center Management . . . . . 2 Cr. Hrs.
Planning and operation of center for inactive records; physical plant requirements, equipment, personnel and services. Introduces basic archival knowledge, methods and techniques; importance of businesses preserving records.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 147 Forms Design and Control . . . . . 2 Cr. Hrs.
Introduces basic principles of forms design and control to obtain maximum advantage of data at minimum cost.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 149 Procedures Manuals. . . . . 2 Cr. Hrs.
Fundamentals of task analysis, organization, writing, production, and distribution of procedures manuals. Applicable to all areas.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 160 Micromedia Skills A . . . . . 2 Cr. Hrs.
Introduction to basic and important characteristics of microforms and equipment.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 161 Micromedia Skills B . . . . . 2 Cr. Hrs.
Fundamentals of terminology, coding, indexing, film technology, storage and Metrication.
15 Hrs. Theory-23 Hrs. Lab. 38 Ct. Hrs.

IMT 164 Micromedia Files Management . . . . . 2 Cr. Hrs.
Trains the administrative and production student in principles of arrangement of microform files.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 170 Micromedia Production A. . . . . 2 Cr. Hrs.
Basic production methods, equipment specifications, materials, supplies and minor repairs, adjustments and replacements.
10 Hrs. Theory-30 Hrs. Lab. 40 Ct. Hrs.

IMT 171 Micromedia Production B. . . . . 2 Cr. Hrs.
Familiarization with image capture, developing, processing and duplicating equipment.
10 Hrs. Theory-30 Hrs. Lab. 40 Ct. Hrs.

IMT 201 Career Planning . . . . . 2 Cr. Hrs.
Study of career goals and self-evaluation with emphasis on job seeking skills such as resumes, applications and interviews.
Independent Study-45 Hrs. Lab 45 Ct. Hrs.

IMT 202 Technical Supervision Skills. . . . . 2 Cr. Hrs.
Introduces basic personnel skills, working with people, organizing and planning tasks. Emphasis on basic supervisory skills with case studies under faculty supervision.
Independent Study-45 Hrs. Lab. 45 Ct. Hrs.

IMT 205 Microfilm Use in Libraries . . . . . 2 Cr. Hrs.
Introduces microforms equipment and soft ware with special emphasis on effective use in libraries. Examines selection,

organization, implementation and operation of microforms systems in libraries.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 210 Library Technician Research Project . . . 2 Cr. Hrs.
Independent research, under faculty supervision, into one specific aspect of the Library Media Technician's role in libraries today, culminating in a written report.
Independent Study-45 Hrs. Lab 45 Ct. Hrs.

IMT 211 Library Network Operations . . . . . 2 Cr. Hrs.
Introduces cooperative systems among libraries, operations, services, advantages and problems. Studies union lists, union catalogs, and circulation privileges.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 213 Library Special Collections . . . . . 2 Cr. Hrs.
Introduces collections of specialized materials; special format and media, special subject areas. Study of special library collection services, operations, maintenance and acquisitions.
15 Hrs. Theory-23 Hrs. Lab 38 Ct. Hrs.

IMT 215 Library Community Service Seminar A . . . . . 2 Cr. Hrs.
Students prepare proposals and complete projects with disadvantages, handicapped, geriatric, and bi-lingual groups under faculty supervision.
Independent Study-45 Field Hrs. 45 Ct. Hrs.

IMT 216 Library Community Service Seminar B . . . . . 2 Cr. Hrs.
Continuation of student projects to meet community needs and provide practical experience for students.
Independent Study-45 Field Hrs. 45 Ct. Hrs.

IMT 235 Word Processing Management . . . . . 2 Cr. Hrs.
Presents all aspects of implementing, managing and supervising word processing systems; study of personnel selection and training.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 240 Records Management Information Systems . . . . . 2 Cr. Hrs.
Emphasizes special information and records management systems through analysis of case studies, guest lectures and field trips. Development and implementation of records retention schedules, destruction schedules and vital records programs.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 246 Forms Management . . . . . 2 Cr. Hrs.
Advanced course for development and management of forms programs; production, precurement; selection and training personnel.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 255 Records Management Seminar A. . . . . 2 Cr. Hrs.
Students prepare proposals and complete projects under faculty supervision to gain practical work experience.
30 Hrs. Field 30 Ct. Hrs.

IMT 256 Records Management Seminar B. . . . . 2 Cr. Hrs.
Continuation of student projects to meet community needs and provide practical experience for students.
30 Hrs. Field 30 Ct. Hrs.

IMT 261 Micromedia Center Operations . . . . . 2 Cr. Hrs.
Comprehensive technical management simulation of document preparation, records control and administration. Micromedia center customer services, financial and personnel management. Study of film procedures and product control through programmed study, field observations and laboratory exercises.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 265 Micromedia Indexing . . . . . 2 Cr. Hrs.
In depth technical level study of indexing methods of document input to micromedia. Field observation and application.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 266 Micromedia Information Systems . . . . . 2 Cr. Hrs.
Study of current micromedia systems, design, implementation and operation. Examination of future technology. Technical management study of Federal, State and local safety regulations; standards controlling use and disposal of chemicals.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 275 Micromedia Seminar A . . . . . 2 Cr. Hrs.
Students write proposals and complete micromedia projects in the field under faculty supervision.
45 Hrs. Field 45 Ct. Hrs.

IMT 276 Micromedia Seminar B . . . . . 2 Cr. Hrs.
Continuation of student projects to meet community needs and provide practical experience for students.
45 Hrs. Field 45 Ct. Hrs.

IMT 281 Data Terminals A . . . . . 2 Cr. Hrs.
Introduces basic aspects of memory systems and programming control computers and peripheral information handling equipment.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 282 Data Terminals B . . . . . 2 Cr. Hrs.
Examines Input/Output sections of intelligent and non-intellect terminals. Hands-on experience.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 291 Technician Certification A . . . . . 2 Cr. Hrs.
Initial instruction in basic employment job skills. Certification as micrographics technician by local National Micrographics Association Chapter.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 292 Advanced Technician Certification B . . . . . 2 Cr. Hrs.
Black and white film principles, advanced photo chemistry and quality control, COM, maintenance and repairs and systems design.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 293 Senior Technician Certification . . . . . 2 Cr. Hrs.
Investigation of color film chemistry and advanced optics; micrographics, records management administration, retrieval and personnel.
10 Hrs. Theory-30 Hrs. Lab 40 Ct. Hrs.

IMT 297 Cooperative Work Experience . . . . . 2 Cr. Hrs.
Actual work experience under professional supervision; students apply learned work skills on the job.
100 Hrs. Field 100 Ct. Hrs.

IMT 299 Independent Study . . . . . 2 Cr. Hrs.
Special studies arranged between student and faculty advisor to give the student advanced or remedial learning opportunities.
Independent Study-40 Hrs. 40 Ct. Hrs.

EXECUTIVE HOUSEKEEPING (A)
Associate Degree

Training in this program will make a person job ready in Executive Housekeeping. Contact your advisor if you are interested in specializing in any of the following areas: Custodial Service Work or National Housekeeping Credentials.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
EXH 100	Introduction to Executive Housekeeping	2	30
EXH 105	Physical Maintenance Control	2	30
EXH 106	Safety and Sanitation	2	30
EXH 108	Basic Interior	2	30
EXH 109	Institutional Budgeting	2	30
EXH 110	Management for the Executive Housekeeper	2	30
EXH 111	Physical Maintenance I	2	30

EXH 112	Physical Maintenance II	2	30
EXH 115	Tools/Equipment Familiarization	3	60
EXH 205	Care of Outside Area	3	60
EXH 206	Surgical Cleaning	2	30
EXH 208	Computing and Estimating	2	30
EXH 297	Related Practical Training or Approved Electives	18	810
		44	1230

Required Related Courses

	English Elective	3	60
	Psychology Elective	3	60
	Math Elective	3	60
	Hotel/Motel Operations Elective	7	210
		16	390
	TOTAL REQUIRED HOURS	60	1620

Additional Major Courses

EXH 107	Cleaning Compounds	2	30
EXH 207	Textiles	3	45
EXH 298	Executive Housekeeping Workshop	2	30
EXH 299	Independent Study	2	30

EXECUTIVE HOUSEKEEPING (A)

EXH 100 Introduction to Executive Housekeeping . . . . . 2 Cr. Hrs.
Defines and discusses responsibilities assigned to the housekeeping department.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 105 Physical Maintenance Control . . . . . 2 Cr. Hrs.
Emphasizes the care and maintenance of rooms, floors, walls, miscellaneous areas and equipment, materials, and laundry.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 106 Safety and Sanitation . . . . . 2 Cr. Hrs.
Familiarization with isolation and safety and its application to actual operations.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 107 Cleaning Compounds . . . . . 2 Cr. Hrs.
Identification of the cleaning compounds used in the physical maintenance of buildings and grounds.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 108 Basic Interior . . . . . 2 Cr. Hrs.
Principles of decoration, color schemes, styles, psychological effects, room planning and furnishing, lighting and color coordination.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 109 Institutional Budgeting . . . . . 2 Cr. Hrs.
Forecasting equipment, labor and supply expenses; developing schedules.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 110 Management for the Executive Housekeeper . . . . . 2 Cr. Hrs.
Department organization: job allocation, work simplification, job description and daily inspection routine for the Executive Housekeeper.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 111 Physical Maintenance I . . . . . 2 Cr. Hrs.
This course is designed to have the student acquire a knowledge of the different physical maintenance techniques.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 112 Physical Maintenance II . . . . . 2 Cr. Hrs.
A continuation of the Physical Maintenance I. This course will emphasize the role physical maintenance plays with that of mechanical maintenance.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 115 Tools/Equipment Familiarization . . . . . 3 Cr. Hrs.
A course in which the student familiarizes himself with the tools and equipment used in a housekeeping environment.
15 Hrs. Theory — 45 Hrs. Lab — 60 Ct. Hrs.

EXH 205 Care of Outside Area . . . . . 3 Cr. Hrs.
Plans, lays out, supervises, and inspects the work of a crew of groundskeepers and other workers involved in mowing, watering, spraying, trimming, planting, cultivating, snow removal, and general clean-up operations.
15 Hrs. Theory — 45 Hrs. Lab — 60 Ct. Hrs.

EXH 206 Surgical Cleaning . . . . . 2 Cr. Hrs.
A course where the student will become familiar with the cleaning technology used in an environment where germs are detrimental to good health.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 207 Textiles . . . . . 3 Cr. Hrs.
Designed to make a student knowledgeable of the different types of fibers and the different cleaning techniques used in the upkeep of these fibers.
45 Hrs. Theory — 45 Ct. Hrs.

EXH 208 Computing and Estimating . . . . . 2 Cr. Hrs.
Computing and estimating supplies, equipment, and personnel needed to accomplish objectives within the housekeeping.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 297 Related Practical Training . . . . . 18 Cr. Hrs.
The student is engaged in intensive practical training on a specific topic under the direction of a qualified member of the Division Faculty. The student is required to spend a minimum of three hours a week in the class (preparation and training as is normally required). Upon successful completion of the program, the student will be given a grade by his assigned instructor.
45 Hrs. Theory — 225 Hrs. Lab — 270 Ct. Hrs.

EXH 298 Executive Housekeeping Workshop . . . . 2 Cr. Hrs.
This course is designed to accommodate industry, by offering weekly seminars in any of the Executive Housekeeping courses.
30 Hrs. Theory — 30 Ct. Hrs.

EXH 299 Independent Study . . . . . 2 Cr. Hrs.
This course provides opportunity for a student to study intensively a specific topic of interest under the direction of a qualified faculty member.
30 Hrs. Theory — 30 Ct. Hrs.

This program is awaiting approval from the appropriate State Agency.

PARALEGAL (A)
Associate Degree
(This program has not yet been approved by the appropriate agencies.)

This program is designed to prepare individuals with job entry skills for the General Paralegal field. Emphasis is placed on practical skills such as interviewing, research, and

document drafting. Programs may be designed with areas of specialization in the following: Bi-Lingual Paralegal, Research Specialist, Criminal Law Specialist, Public Law Specialist, or Probate and Estate Planning Specialist. Check with your counselor for assistance in designing your program specialization.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
PAR 100	Introduction to Paralegal	3	45
PAR 105	Torts	3	53
PAR 106	Contracts	3	53
PAR 107	Legal Research	3	53
PAR 108	Civil Procedures	3	53
PAR 109	Property	3	53
PAR 110	Business Organizations	3	53
PAR 115	Domestic Relations	3	53
PAR 116	Commercial Law	3	53
PAR 117	Constitutional Law	3	53
PAR 118	Criminal Law & Procedures	3	53
PAR 119	Probate	3	53
PAR 210	Paralegal Workshop	6	90
PAR 219	Paralegal Seminar	3	50
		45	851

Required Related Courses

	English Elective	3	45
	General Studies Elective	9	135
		12	180
	TOTAL REQUIRED HOURS	57	1031

Additional Major Courses

PAR 120	Office Procedures	3	53
PAR 125	Tax Law	3	53
PAR 126	Creditor/Debtor/Bankruptcy	3	53
PAR 127	Evidence	3	53
PAR 128	Environmental & Natural Resource Law	3	53
PAR 129	Administrative Law	3	53
PAR 130	Real Estate & Land Use Law	3	53
PAR 205	Spanish for the Paralegal	3	53
PAR 206	Bi-Lingual Paralegal Seminar	3	53
PAR 207	Legal Research Seminar I	3	53
PAR 208	Legal Research Seminar II	3	53
PAR 209	Real Estate Seminar	3	53
PAR 215	Criminal Law Seminar	3	53
PAR 216	Family Law Seminar	3	53
PAR 217	Public Law Seminar	3	53
PAR 218	Probate & Estate Planning Seminar	3	53

PARALEGAL (A)
Certificate Program

Holders of the Certificate will perform research, investigation, interviewing, drafting of documents and assistantship in private law firms, legal assistance programs, governmental agencies, and private business organizations.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
PAR 100	Introduction to Paralegal	3	45
PAR 107	Legal Research	3	53
PAR 108	Civil Procedures	3	53
PAR 210	Paralegal Workshop	6	90
	Paralegal Elective	3	53
	Paralegal Elective	3	53
	Paralegal Elective	3	53
	Paralegal Elective	3	53
	Paralegal Elective	3	53
		33	559
	TOTAL REQUIRED HOURS	33	559

Additional Major Courses

PAR 105	Torts	3	53
PAR 106	Contracts	3	53
PAR 109	Property	3	53
PAR 110	Business Organizations	3	53
PAR 115	Domestic Relations	3	53
PAR 116	Commercial Law	3	53
PAR 117	Constitutional Law	3	53
PAR 118	Criminal Law & Procedure	3	53
PAR 119	Probate	3	53
PAR 120	Office Procedures	3	53
PAR 125	Tax Law	3	53
PAR 126	Creditor/Debtor/Bankruptcy	3	53
PAR 127	Evidence	3	53
PAR 128	Environmental & Natural Resource Law	3	53
PAR 129	Administrative Law	3	53
PAR 130	Real Estate & Land Use Law	3	53
PAR 205	Spanish for the Paralegal	3	53
PAR 206	Bi-Lingual Paralegal Seminar	3	53
PAR 207	Legal Research Seminar I	3	53
PAR 208	Legal Research Seminar II	3	53
PAR 209	Real Estate Seminar	3	53
PAR 215	Criminal Law Seminar	3	53
PAR 216	Family Law Seminar	3	53
PAR 217	Public Law Seminar	3	53
PAR 218	Probate & Estate Planning Seminar	3	53
PAR 219	Paralegal Seminar	3	53

PARALEGAL (A)

PAR 100 Introduction to Paralegal . . . . . 3 cr. hrs.
Course is designed primarily for those students interested in becoming a Paralegal with emphasis on career options, legal concepts and terminology and basic techniques and functions of the paralegal.
45 hrs. theory — 45 ct. hrs.

PAR 105 Torts . . . . . 3 cr. hrs.
Course introduces student to basic area of law dealing with civil (as opposed to criminal) wrongs, with emphasis on the area of negligence law.
30 hrs. theory - 23 hrs. lab — 53 ct. hrs.

PAR 106 Contracts . . . . . 3 cr. hrs.
Course introduces student to basic area of contracts dealing with special emphasis on the preparation of contracts.
30 hrs. theory - 23 hrs. lab — 53 ct. hrs.

PAR 107 Legal Research . . . . . 3 cr. hrs.
Course is designed to locate and interpret federal, state, and local statutes and ordinances with emphasis on locating relevant case law interpretations of this legislation. Use of law libraries is emphasized.
30 hrs. theory - 23 hrs. lab — 53 ct. hrs.

PAR 108 Civil Procedures . . . . . 3 cr. hrs.
An intensive study of the Colorado Rules of Civil Procedure and their importance in the processing of cases through the

court system. Emphasis is on drafting relevant forms arising from these rules.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 109 Property . . . . . 3 cr. hrs.
Course emphasizes drafting of forms for partnership agreements, real estate transactions, procedures relevant to subdivision requirements and other requirements of real estate law practice.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 110 Business Organizations . . . . . 3 cr. hrs.
Course will introduce students to the law of sole proprietorships, partnerships and corporations, with emphasis on drafting the numerous documents inherent in corporate law practice.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 115 Domestic Relations . . . . . 3 cr. hrs.
Course deals with standard legal problems of marriage including dissolution of marriage, dependent and neglected children, children in need of supervision, adoptions, etc.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 116 Commercial Law . . . . . 3 cr. hrs.
Course deals with Colorado law of sales and secured transactions with emphasis on Uniform Commercial Code. Forms and documents dealing with these areas will also be covered in detail.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 117 Constitutional Law . . . . . 3 cr. hrs.
The intent of the course is to introduce the student to state and federal constitutional law and principles and individual guarantees against governmental or private action. Individual rights emphasized.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 118 Criminal Law & Procedure . . . . . 3 cr. hrs.
Covers criminal law theory, construction and interpretation of criminal law statutes, various categories of criminal offenses and process of criminal justice, investigation, arrest, trial and judgment.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 119 Probate . . . . . 3 cr. hrs.
Stress will primarily be on drafting wills, settling estates, trusts, and tax considerations involved in each of these areas.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 120 Office Procedures . . . . . 3 cr. hrs.
Course is geared to teaching the Paralegal such skills as timekeeping, management controls, client files, checklists, and other skills necessary to keep any law firm operating efficiently.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 125 Tax Law . . . . . 3 cr. hrs.
Course will introduce the student to Internal Revenue Code rules and regulations, its forms, and special tax problems relating to property and inheritance. Deals with mechanics, not theory, of tax law.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 126 Creditor/Debtor/Bankruptcy . . . . . 3 cr. hrs.
A study of the creditors rights with emphasis or pre-judgement and judgement remedies. Emphasis also on bankruptcy procedures.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 127 Evidence. . . . . 3 cr. hrs.
This course introduces the student to the Rules of Evidence and will cover the methodology of interviewing witnesses, investigation and marshalling of evidence for trial of cases.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 128 Environmental & Natural Resource Law . . . . . 3 cr. hrs.
Introduces students to new field of environmental law, with attention to mineral rights law, water law, land use legislation, public and private interest questions, tax questions and other related areas.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 129 Administrative Law . . . . . 3 cr. hrs.
Course introduces the student to the Rule of Administrative Agencies, and daily operating procedures of agencies, plus how the paralegal can work within these various agency structures.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 130 Real Estate & Land Use Law. . . . . 3 cr. hrs.
The course emphasizes the methods of utilization of land with regard to land planning, development financing. Methods of appraisal will be studied, together with tax problems relating to real estate.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 205 Spanish for the Paralegal . . . . . 3 cr. hrs.
This course will provide the student with a working knowledge and vocabulary of Spanish in the field of law.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 206 Bi-Lingual Paralegal Seminar . . . . . 3 cr. hrs.
This course will provide the student with a more intensified correlation of legal principles and Spanish language, utilizing research and writing as a primary basis.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

PAR 207 Legal Research Seminar I . . . . . 3 cr. hrs.
Students will continue utilization of research techniques learned in PAR 109. Emphasis placed upon student's ability to brief cases and write legal memorandums.
45 hrs. theory 45 ct. hrs.

PAR 208 Legal Research Seminar II. . . . . 3 cr. hrs.
The student will continue the use of techniques learned in PAR 109, and Legal Research Seminar I.
45 hrs. theory 45 ct. hrs.

PAR 209 Real Estate Seminar . . . . . 3 cr. hrs.
This course will coordinate the principles of real estate law, through work projects and case studies.
45 hrs. theory 45 ct. hrs.

PAR 210 Paralegal Workshop . . . . . 12 cr. hrs.
Each Paralegal Workshop will place the student in a working situation involving their area of speciality.
0 hrs. theory - 180 hrs. lab 180 ct. hrs.

PAR 215 Criminal Law Seminar . . . . . 3 cr. hrs.
This course will develop the skills of the student by working with actual as well as hypothetical case studies.
45 hrs. theory 45 ct. hrs.

PAR 216 Family Law Seminar. . . . . 3 cr. hrs.
This course will develop the skills of the student by working with actual as well as hypothetical case studies.
45 hrs. theory 45 ct. hrs.

PAR 217 Public Law Semianr . . . . . 3 cr. hrs.
This course will develop the skills of the student by working with actual as well as hypothetical case studies.
45 hrs. theory 45 ct. hrs.

PAR 218 Probate & Estate Planning Seminar . . . . . 3 cr. hrs.
This course will develop the skills of the student by working with actual as well as hypothetical case studies.
45 hrs. theory 45 ct. hrs.

PAR 219 Paralegal Seminar . . . . . 3 cr. hrs.
This course will bring together a focus in general Paralegal skills, and review crucial functions in the general Paralegal field.
30 hrs.theory - 23 hrs. lab 53 ct. hrs.

RECREATIONAL LEADERSHIP (R)
Associate Degree Program

The Recreational Leadership program is designed specifically to meet the needs of individuals participating in the profession. The program places emphasis on techniques, planning and organization in the field of Recreation.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
REL 110	Intro. to Recreation Service	3	45
REL 111	Field Work	3	45
REL 112	Field Work	3	45
REL 113	Field Work	3	45
REL 121	Sports Officiating	5	98
REL 125	Dance Activities	5	98
REL 126	Tumbling and Gymnastics	2	30
REL 145	Arts and Crafts	2	30
REL 201	Team Sports	2	30
REL 205	Group Leadership	2	30
REL 207	Elementary Games & Activities	5	98
REL 208	Programming Aquatic Activities	2	30
REL 209	Creative Dramatics	5	98
REL 211	Individual Lifetime Sports	2	30
REL 215	Recreational Equipment & Facilities	3	45
REL 216	Recreation in Special Settings	2	30
REL 217	Techniques in Program Planning & Org.	3	45
REL 218	Outdoor Recreation and Camping	2	30
		54	902

Required Related Courses

	English	3	45
	Social Science	3	45
	Accounting	4	60
	Music	3	45
	TOTAL REQUIRED HOURS	67	1097

Additional Major Courses

REL 122	Sports Officiating	5	98
REL 123	Sports Officiating	5	98
REL 147	Social Recreation	3	45
REL 202	Team Sports	2	30
REL 203	Team Sports	2	30
REL 212	Individual Lifetime Sports	2	30
REL 213	Individual Lifetime Sports	2	30
REL 299	Independent Study	2-6	45-135

RECREATIONAL LEADERSHIP (R)

REL 110 Introduction to Recreation Services . . . . . 3 Cr. Hrs.
Introduces the basic fundamentals of the nature, scope and significance of organized recreation services. It includes study of factors involved in the operation of basic recreation units, major program areas, organizational patterns and the interrelationships of special agencies and institutions which serve the recreational needs of society.
45 Hrs. Theory 45 Ct. Hrs.

REL 111 Field Work . . . . . 3 Cr. Hrs.
Prerequisite: REL 110
A course designed to give the recreation student practical experience under supervision. This first experience should have the student working with an agency leader. Exposure to leadership responsibilities of planning, conducting and evaluating an activity or program should result.
45 Hrs. Theory 45 Ct. Hrs.

REL 112 Field Work . . . . . 3 Cr. Hrs.
Prerequisite: REL 111
Second supervised course is designed to give the recreation student practical experience in developing recreation leadership skills. This experience should have the student working as direct leader with the responsibility for planning, conducting and evaluating an activity or program.
45 Hrs. Theory 45 Ct. Hrs.

REL 113 Field Work . . . . . 3 Cr. Hrs.
Prerequisite: REL 112
Third supervised course is to give the recreation student practical experience under supervision. This experience should involve the student working as an indirect leader by assisting a group or individual in the planning, conducting and evaluating the group's or individual's desired experience.
45 Hrs. Theory 45 Ct. Hrs.

REL 121 Sports Officiating . . . . . 5 Cr. Hrs.
Prerequisite: REL 201
A study of the rules and mechanics of officiating. This course includes practical experience in competitive and recreational sports of basketball and volleyball.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

REL 122 Sports Officiating . . . . . 5 Cr. Hrs.
Prerequisite: REL 202
A study of the rules and mechanics of officiating. This course includes practical experience in competitive and recreational sports of baseball and softball.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

REL 123 Sports Officiating . . . . . 5 Cr. Hrs.
Prerequisite: REL 203
A study of the rules and mechanics of officiating. This course includes practical experience in competitive and recreational sports of football and soccer.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

REL 125 Dance Activities . . . . . 5 Cr. Hrs.
Introduces methods and materials for folk, square and social dance. Attention is given to terminology, skills, selection and presentation of dances. Emphasis is on knowledge and understanding of administration and promotion rather than on mastery of performance skills.
30 Hrs. Theory - 68 Hrs. Lab 98 Ct. Hrs.

REL 126 Tumbling and Gymnastics . . . . . 2 Cr. Hrs.
Designed to acquaint the student with skills, teaching techniques and progression of tumbling, stunts and gymnastics for elementary and secondary school students.
30 Hrs. Theory 30 Ct. Hrs.

REL 145 Arts and Crafts . . . . . 2 Cr. Hrs.
Demonstrates the methods and materials used in arts and crafts projects for a variety of recreational settings; school, camp, playground, recreation center and clubs. Emphasis is

on constructing, administering, promoting and teaching crafts.
30 Hrs. Theory 30 Ct. Hrs.

REL 147 Social Recreation . . . . . 3 Cr. Hrs.
Introduces methods and materials for planning, organizing and conducting social activities for groups of various sizes and ages in a variety of social situations. Emphasis is on the mechanics of planning and presenting a repertoire of activities for social recreation events. Major activities will be discussed, played, and/or demonstrated.
45 Hrs. Theory 45 Ct. Hrs.

REL 201 Team Sports . . . . . 2 Cr. Hrs.
A course of study covering the fundamental skills, systems and rules of team sports. Emphasis is upon knowledge and understanding of the organization and promotion of sports rather than mastery of performance skills for basketball and volleyball.
30 Hrs. Theory 30 Ct. Hrs.

REL 202 Team Sports . . . . . 2 Cr. Hrs.
A course of study covering the fundamental skills, systems and rules of team sports. Emphasis is upon knowledge and understanding of the organization and promotion of sports rather than master of performance skills of baseball and softball.
30 Hrs. Theory 30 Ct. Hrs.

REL 203 Team Sports . . . . . 2 Cr. Hrs.
A course of study covering the fundamental skills, systems and rules of team sports. Emphasis is upon knowledge and understanding of the organization and promotion of sports rather than mastery of performance skills of football and soccer.
30 Hrs. Theory 30 Ct. Hrs.

REL 205 Group Leadership. . . . . 2 Cr. Hrs.
Provides insight into the theory, principles and practice of planning, organizing and conducting effective recreation programs for various groups. Emphasis is on group involvement.
30 Hrs. Theory 30 Ct. Hrs.

REL 207 Elementary Games and Activities . . . . . 5 Cr. Hrs.
Introduces methods and procedures in the instruction of recreational games and rhythmical activities. Course includes basic skills of games and activities at the elementary and secondary levels.
30 Hrs. Theory - 68 Lab Hrs. 98 Ct. Hrs.

REL 208 Programming Aquatic Activities . . . . . 2 Cr. Hrs.
Includes the basic terminology, skills and techniques of selected water related activities and their use in recreation programs.
30 Hrs. Theory 30 Ct. Hrs.

REL 209 Creative Dramatics . . . . . 5 Cr. Hrs.
A survey of the scope, values and fundamental skills of drama and its role in recreation. Emphasis is on knowledge, understanding and promotion of drama rather than mastery of performance skills.
30 Hrs. Theory - 68 Lab Hrs. 98 Ct. Hrs.

REL 211 Individual Lifetime Sports . . . . . 2 Cr. Hrs.
An introductory course designed to acquaint the student with skills necessary to organize and conduct activities in the area of individual games with emphasis on the lifetime approach to tennis and badminton.
30 Hrs. Theory 30 Ct. Hrs.

REL 212 Individual Lifetime Sports . . . . . 2 Cr. Hrs.
An introductory course designed to acquaint the student with skills necessary to organize and conduct activities in the area of individual games with emphasis on the lifetime approach to bowling and billiards.
30 Hrs. Theory 30 Ct. Hrs.

REL 213 Individual Lifetime Sports . . . . . 2 Cr. Hrs.
An introductory course designed to acquaint the student with skills necessary to organize and conduct activities in the area of individual games with emphasis on the lifetime approach to golf and handball.
30 Hrs. Theory 30 Ct. Hrs.

REL 215 Recreational Equipment & Facilities . . . . . 3 Cr. Hrs.
Designed to acquaint and familiarize the student with recreational equipment and program facilities.
45 Hrs. Theory 45 Ct. Hrs.

REL 216 Recreation in Special Settings . . . . . 2 Cr. Hrs.
Insight into special recreation programming: therapeutic recreation; recreation for aged; recreation for the handicapped as related to community and volunteer services; recreation rehabilitation for the alcoholic, juvenile delinquent and criminal.
30 Hrs. Theory 30 Ct. Hrs.

REL 217 Techniques in Program Planning and Organization. . . . . 3 Cr. Hrs.
A study of the essential elements and basic principles involved in the organization, supervision, promotion and evaluation of various types of recreation programs. Emphasis is on organized programs and services.
45 Hrs. Theory 45 Ct. Hrs.

REL 218 Outdoor Recreation and Camping. . . . . 2 Cr. Hrs.
Includes study of the history, development and trends of outdoor recreation, conservation and organized camping. Emphasis is on laboratory work, field trips and the development of outdoor skills.
30 Hrs. Theory 30 Ct. Hrs.

REL 299 Independent Study . . . . . 2-6 Cr. Hrs.
Student will study intensively a topic of interest under the direction of a qualified faculty member. The number of credit hours to be allowed for successful completion of the course will be determined cooperatively by the instructor and the Division Director.
45-135 Hrs. Indep. Study 45-135 Ct. Hrs.

TRAFFIC ENGINEERING TECHNOLOGY (R)
Associate Degree Program

This program is intended to prepare students for job entry skills in the area of City, County, and Regional Traffic Engineering in both the public and private sectors. The primary emphasis of this program is dealing with automotive traffic and the problems associated with it.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
TET 100	Intro. to Traffic Engineering	3	45
TET 105	Traffic Engineering Studies I	3	45
TET 106	Traffic Engineering Studies II	3	45
TET 107	Traffic Admin. & Safety	3	45
TET 108	Control Devices	5	90
TET 109	Traffic Engineering Psychology	3	45

TET 110	Traffic Laws, Ordin. & Regulations	3	45
TET 201	Geometric Design I	5	90
TET 202	Geometric Design II	6	105
TET 205	Traffic Accident Reporting & Anal.	3	45
TET 211	Urban Transportation Planning I	3	45
TET 212	Urban Transportation Planning II	3	45
TET 219	Traffic Engineering Problems	3	45
		46	735

Required Related Courses

	English Elective	3	45
	English Elective	3	45
	Math Elective	12	180
	Social Science Elective	3	45
		21	315
	TOTAL REQUIRED HOURS	67	1050

Additional Major Courses

TET 207	Data Collection Techniques & Evaluation	3	45
TET 215	Data Processing for Traffic Engineers	3	45
TET 216	Pictorial Drafting	3	45
TET 217	Map Reading & Photo. Interpretation	3	45
TET 218	Land Use & the Quality of Life	6	105
TET 225	Constru. Devices for Traffic Control	2	30
TET 226	Adv. Constru. Devices for Traffic Cont.	4	60
TET 297	Coop. Work Exp./ Practical Training	1-6	45-270
TET 299	Independent Study	2-6	45-135

TRAFFIC ENGINEERING TECHNOLOGY (R)

TET 100 Introduction to Traffic Engineering ..... 3 cr. hrs.
This course offers a general overview of the field of traffic engineering technology and provides an insight to related career opportunities. It relates human factors and driver characteristics to the vehicle, roadway and environment. Traffic characteristics are defined in terms of speed, design, zoning,density, gaps and lags, and traffic volume. The course serves as an introduction for traffic engineering technology students and as a survey course for students majoring in other related fields.
45 hrs. theory — 45 ct. hrs.

TET 105 Traffic Engineering Studies I ..... 3 cr. hrs.
Course includes problems applicable to surveys, survey types, execution, analysis, and field techniques. Stressed are statistical significance, innovations of applications and hands-on procedures.
45 hrs. theory — 45 ct. hrs.

TET 106 Traffic Engineering Studies II ..... 3 cr. hrs.
A continuation of TET 105 with emphasis placed upon such topics as origin-destination surveys, transit studies, parking studies, lighting studies and observance studies.
45 hrs. theory — 45 ct. hrs.

TET 107 Traffic Administration and Safety ..... 3 cr. hrs.
By studying traffic administration and safety, the student learns how budget, public relations, interagency problems and other systems operations affect traffic engineering. Stressing traffic safety as a basic consideration for all technical aspects of the field, the student is shown that the field traffic surveys, control devices, geometric design, traffic studies, traffic laws and urban transportation planning constitute the major subject areas of traffic engineering technology.
45 hrs. theory — 45 ct. hrs.

TET 108 Control Devices ..... 5 cr. hrs.
In the general context of design maintenance and placement, the course emphasizes sign (illumination, lettering, response time, type and design) signals (cycle lengths, phases, offsets, equipment and maintenance) marking, lighting (highway, intersections, special areas) and delineation.
45 hrs. theory - 45 hrs. lab — 90 ct. hrs.

TET 109 Traffic Engineering Psychology ..... 3 cr. hrs.
Course objectives include behavioral theory, behavioral measurements and driver expectancy. Course will stress practical application and research techniques.
45 hrs. theory — 45 ct. hrs.

TET 110 Traffic Laws, Ordinances and Regulations ..... 3 cr. hrs.
Course covers the court system, legislative procedure, legislative language, judicial interpretation and their application to traffic control.
45 hrs. theory — 45 ct. hrs.

TET 201 Geometric Design I ..... 5 cr. hrs.
Geometrics will be defined and geometric design will be related to accident and traffic operations. Capacity will also be covered.
45 hrs. theory - 45 hrs. lab — 90 ct. hrs.

TET 202 Geometric Design II ..... 6 cr. hrs.
Prerequisite: TET 201.
A continuation of TET 201 with added instruction in topics such as control of access, grade separations and interchanges, safety, research, capacity, freeways and the expressways, etc.
60 hrs. theory - 45 hrs. lab — 105 ct. hrs.

TET 205 Traffic Accident Reporting and Analysis ..... 3 cr. hrs.
Course objectives include reporting an accident, determining violations and causes, analyzing mass accident data, determining causative elements, and proposing solutions to accident problems.
45 hrs. theory — 45 ct. hrs.

TET 207 Data Collection Techniques and Evaluation ..... 3 cr. hrs.
Basic principles of sampling; survey designs; systems of sampling; methods of estimation; problem definition; evaluation of information collected; organization and preparation of reports including techniques of collecting, interpreting and presenting information useful in traffic engineering.
45 hrs. theory — 45 ct. hrs.

TET 211 Urban Transportation Planning I ..... 3 cr. hrs.
Course includes an introduction to the purpose, technique and limitations of urban transportation planning. The use of output from the planning process as an operational tool and the limitations on accuracy will be covered.
45 hrs. theory — 45 ct. hrs.

TET 212 Urban Transportation Planning II ..... 3 cr. hrs.
Prerequisite: TET 211.
A continuation of TET 211 with additional instruction in model split techniques, parking, traffic assignments,

environmental considerations, development of alternatives and economic analysis.
45 hrs. theory 45 ct. hrs.

TET 215 Data Processing for Traffic Engineers . . . . . 3 cr. hrs.
Effective use of automatic equipment necessary to meet the information needs of traffic engineers. Study of the basic data processing concepts and procedures including management information systems, the hardware and software necessary for system implementation and intra-firm and agency coordination.
45 hrs. theory 45 ct. hrs.

TET 216 Pictorial Drafting . . . . . 3 cr. hrs.
Problems involving the construction, layout, and rendering of pictorial illustrations of a technical nature, including exploded assemblies and assembled sections, using axonometrics, and perspective projection.
45 hrs. theory 45 ct. hrs.

TET 217 Map Reading and Photo Interpretation . . . . . 3 cr. hrs.
Interpretation and information gathering from maps and aerial photos. Use and application of black and white and color photos to traffic engineers. Final project will be evaluation of an area for specific proposal.
45 hrs. theory 45 ct. hrs.

TET 218 Land Use and the Quality of Life . . . . . 6 cr. hrs.
This course brings together the concepts of traffic engineering and relates them to the broader concepts of land use. Studies will include municipal government and the citizen processes involved in local land use decision making systems.
60 hrs. theory - 45 hrs. lab 105 ct. hrs.

TET 219 Traffic Engineering Problems . . . . . 3 cr. hrs.
Social, economic and psychological factors which influence traffic engineering, traffic engineering issues and problems of contemporary importance will be discussed.
45 hrs. theory 45 ct. hrs.

TET 225 Construction Devices for Traffic Control . . . . . 2 cr. hrs.
To assist participants in identifying and applying workable concepts and techniques for planning, designing, installing and maintaining signing and marking installations in construction and maintenance areas.
30 hrs. theory 30 ct. hrs.

TET 226 Advanced Construction Devices for Traffic Control . . . . . 4 cr. hrs.
To assist participants in identifying and applying workable concepts and techniques for planning, designing, installing and maintaining signing and marking installations in construction and maintenance areas. Includes legal, environmental, administrative problems and solutions associated with these areas. Also, legal and moral consequences of their actions (and inactions).
60 hrs. theory 60 ct. hrs.

TET 297 Coop. Work Experience/ Practical Experience . . . . . 1-6 Cr. Hrs.
The student is assigned to a local traffic engineering department and is given duties related to the Traffic Engineering Tech. degree program. This practical training program is supervised and coordinated by a College instructor. The student works with an experienced pre-selected supervisor on the job who will grade his/her performance according to College standards. Regular school class attendance is required by all students participating in the course.
45-270 hrs. coop. 45-270 ct. hrs.

TET 299 Independent Study . . . . . 2-6 Cr. Hrs.
The student will study intensively a topic of interest under the direction of a qualified faculty member. The number of credit hours to be allowed for successful completion of the course will be determined cooperatively by the instructor and the Division Director.
45-135 hrs. indep. study 45-135 ct. hrs.

URBAN HORTICULTURE (N)
Certificate or Associate Degree

This program provides entry level and upgrading training for Nurserymen, Greenhouse Worker, Golf Course, Park or Landscape Workers. The graduate may specialize in Greenhouse Management, Landscape Construction, Landscape Design, Nursery Management and Landscape Maintenance and Turf Management.

GREENHOUSE MANAGEMENT (N)
Certificate or Associate Degree

This program is designed to prepare the student with the basic knowledge and skills to work as an Assistant Grower in a Greenhouse or as a Gardener-Florist.

Required Major Courses

Course No.	Title	Cr. hrs.	Ct. hrs.
URH 100	Intro to Urban Horticulture	1	15
URH 101	Plant Science I	4	68
URH 102	Plant Science II	4	68
URH 106	Land scape Plant Materials	4	75
URH 115	Plant Usage	4	75
URH 125	Soils & Fertilizers	4	75
URH 126	Small Engine & Carburetor Repair for Urban Horticulture	3	60
URH 135	Plant Propagation	3	68
URH 136	Horticulture Industries	2	45
URH 145	Sprinkler System Design	3	53
URH 146	Sprinkler System Installation	3	60
URH 200	Greenhouse & Field Experience	3	120
URH 206	Interior Landscape Design	3	60
URH 215	Greenhouse Management	3	45
URH 225	Horticulture Equipment	3	60
URH 226	Horticulture Business Oper	2	30
URH 235	Diseases & Pests	4	68
URH 255	Horticulture Management	2	30
URH 297	Cooperative Work Experience	4	150
		55	1090

Required Related Courses
Required related courses for Associate Degree — selection of 8 semester hours of credit from the following Divisions. 2 semester hours of the 8 hours must be English which is required for an Associate Degree.

Business & Mgmt. Electives	6	90
Communications & Arts Social Sciences Math and Science	8	120
	8	120
	14	210
TOTAL REQUIRED HOURS	69	1300

LANDSCAPE CONSTRUCTION (N)
Certificate or Associate Degree

This program is designed to prepare the student for a position as Foreman or equivalent in the Landscape Construction industry.

Required Major Courses

Course No.	Title	Cr. hrs.	Ct. hrs.
URH 100	Introduction to Urban Horticulture	1	15
URH 101	Plant Science I	4	65
URH 105	Intro to Landscape Construction Drafting	3	60
URH 106	Landscape Plant Materials	4	75
URH 115	Plant Usage	4	75
URH 116	Landscape Planning	3	60
URH 125	Soils & Fertilizers	4	60
URH 126	Small Engine & Carburetor Repair for Urban Horticulture	3	60
URH 145	Sprinkler Systems Design	3	53
URH 146	Sprinkler System Installation	3	60
URH 205	Nursery Management	3	53
URH 210	Landscape Management	3	45
URH 216	Landscape Surveying	3	60
URH 225	Horticulture Equipment	3	60
URH 226	Horticulture Business Operations	2	30
URH 236	Basic Landscape Construction Estimating & Bidding	5	98
URH 255	Horticulture Management	2	30
URH 297	Cooperative Work Experience	4	150
		57	1109

Required Related Courses

Required related courses for Associate Degree — selection of 8 semester credits from the following support Divisions. 2 semester hrs. of the 8 hrs. must be English which is required for an Associate Degree.

Communication & Arts Social Science Science & Math	8	120
	14	210
TOTAL REQUIRED HOURS	71	1319

LANDSCAPE DESIGN (N)
Certificate or Associate Degree

This program will prepare the student to assist in a Garden Center & a Landscape Designer's Office. The curriculum includes drawing, designing, & installation of plans for residential, public & commercial projects.

Required Major Courses

Course No.	Title	Cr. hrs.	Ct. hrs.
URH 100	Intro To Urban Horticulture	1	15
URH 101	Plant Science I	4	68
URH 105	Intro to Landscape Construction Drafting	3	60
URH 106	Landscape Plant Materials	4	75
URH 115	Plant Usage	4	75
URH 116	Landscape Planning	3	60
URH 125	Soils & Fertilizers	4	75
URH 145	Sprinkler System Design	3	53
URH 146	Sprinkler System Installation	3	60
URH 205	Nursery Mgmt.	3	53
URH 210	Landscape Management	3	45
URH 216	Landscape Surveying	3	60
URH 225	Horticulture Equipment	3	60
URH 226	Horticulture Business Operations	2	30
URH 236	Basic Landscape Construction Estimating & Bidding	4	
	& Bidding	5	98
URH 246	Advanced Landscape Planning	3	60
URH 256	Landscape Perspective Drawing	3	60
URH 297	Cooperative Work Experience	4	150
URH 297	Cooperative Work Experience	4	150
		57	1134

Required Related Courses

Required related courses for Associate Degree — selection of 8 semester hrs. credit from the following Divisions. 2 semester hrs. of the 8 hrs. must be English which is required for an Associate Degree.

Communication & Arts Social Sciences Math and Sciences	8	120
	14	120
TOTAL REQUIRED HOURS	71	1344

NURSERY & LANDSCAPE MANAGEMENT (N)
Certificate or Associate Degree

This program is designed to prepare the student for job entry skills as a Nurseryman, Garden Center employee, Landscape Management employee and Park Foreman or equivalent.

Required Major Courses

Course No.	Title	Cr. hrs.	Ct. Hrs.
URH 100	Intro to Urban Horticulture	1	15
URH 101	Plant Science I	4	68
URH 102	Plant Science II	4	68
URH 106	Landscape Plant Materials	4	75
URH 115	Plant Usage	4	75
URH 125	Soils & Fertilizers	4	75
URH 126	Small Engines & Carburetor Repair for Urban Horticulture	3	60
URH 135	Plant Propagation	3	65
URH 145	Sprinkler System Design	3	53
URH 146	Sprinkler System Installation	3	60
URH 155	Arboriculture	2	38
URH 205	Nursery Management	3	53
URH 210	Landscape Management	3	45
URH 225	Horticulture Equipment	3	60

URH 226	Horticulture Business Oper.	2	30
URH 235	Diseases & Pests.	4	68
URH 236	Basic Landscape Construction Estimating & Bidding	5	75
URH 297	Cooperative Work Experience	4	150
		59	1133

Required Related Courses

Required related courses for Associate Degree — selection of 8 semester hours of credit from the following support Divisions. 2 semester hours of the 8 hours must be English which is required for an Associate Degree.

Business & Mgmt.	6	90
Communication & Arts Math & Science Social Sciences	8	120
	14	210
TOTAL REQUIRED HOURS	73	1343

TURF MANAGEMENT (N)

Certificate or Associate Degree

This program is designed to provide the student with entry level job skills in the areas of Golf Course Management, Parks Maintenance, Lawn Maintenance, and Sprinkler System installation. Emphasis is placed on large area turf management.

Required Major Courses

Course No.	Title	Cr. hrs.	Ct. hrs.
URH 100	Intro to Urban Horticulture	1	15
URH 101	Plant Science I	4	68
URH 102	Plant Science II	4	68
URH 106	Landscape Plant Materials	4	75
URH 115	Plant Usage	4	75
URH 125	Soils & Fertilizers	4	75
URH 126	Small Engine & Repair for Urban Horticulture	3	60
URH 145	Sprinkler System Design	3	53
URH 146	Sprinkler System Installation	3	60
URH 155	Arboriculture	2	38
URH 210	Landscape Management	3	45
URH 216	Landscape Surveying	3	60
URH 225	Horticulture Equipment	3	60
URH 235	Diseases & Pests.	4	68
URH 236	Basic Landscape Construction Estimating & Bidding.	4	75
URH 245	Turf Production & Mgmt.	4	75
URH 255	Horticulture Management	2	30
URH 297	Cooperative Work Experience	4	150
		59	1150

Required Related Courses

Required related courses for Associate Degree — selection of 8 semester hours of credit from the following support Divisions. 2 hrs. of the 8 hrs. must be English which is required for an Associate Degree.

Bus. & Mgmt. Electives	6	90
Communication & Arts Math & Science Social Science	8	120
	14	210
TOTAL REQUIRED HOURS	73	1360

URBAN HORTICULTURE (N)

URH 100 Introduction to Urban Horticulture (N) ..... 1 cr. hr.

Rocky Mountain Horticulture is different, but not impossible. Cultural methods and plant materials are suggested which will aid the horticulturist in adjusting to our existing climatic conditions. Basic design principles and maintenance are also covered.

15 hrs. theory - 0 lab — 15 ct. hrs.

URH 101 Plant Science I (N) ..... 4 cr. hrs.

A study of fundamentals of plant growth with major emphasis upon the seed plants. Plant processes and growth related to commercial horticultural practices.

45 hrs. theory - 23 lab — 68 ct. hrs.

URH 102 Plant Science II (N). ..... 4 cr. hrs.

Prerequisite: URH 101.

A continuation of Plant Science URH 101, including factors affecting flowering, seeds, fruits, plant genetics and the lower plants, related to plant diseases likely to be encountered in the field.

45 hrs. theory - 23 lab — 68 ct. hrs.

URH 105 Intro to Landscape Construction Drafting (N) ..... 3 cr. hrs.

This course introduces the student to the proper use of drafting equipment, printing techniques, freehand drawing, scale drawings, and isometric drawings designing landscape structure.

15 hrs. theory - 45 lab — 60 ct. hrs.

URH 106 Landscape Plant Materials (N). ..... 4 cr. hrs.

The identification of deciduous and evergreen plant materials.

30 hrs. theory - 45 lab — 75 ct. hrs.

URH 115 Plant Usage (N) ..... 4 cr. hrs.

Prerequisite: URH 106.

Landscape and native plants are discussed with regard to their individual characteristics, acclimation and usage in the Rocky Mountain area.

30 hrs. theory - 45 lab — 75 ct. hrs.

URH 116 Landscape Planning (N) . . . 3 cr. hrs.

Prerequisites suggested: URH 105, URH 106, URH 115.

Practical experience in drafting and design principles used in planning the home grounds and other areas.

15 hrs. theory - 45 lab — 60 ct. hrs.

URH 125 Soils and Fertilizers (N) ..... 4 cr. hrs.

Prerequisites suggested: URH 101, Math elective.

The properties and management of soils in relation to plant growth with emphasis on the principles of soil fertility and practice of fertilizer use.

30 hrs. theory - 45 lab — 75 ct. hrs.

URH 126 Small Engine & Carburetor Repair for Urban Horticulture (N) ..... 3 cr. hrs.

The servicing, operation, troubleshooting and major overhaul of small engines (both two and four cycle) are studied, both in theory and practical application.

15 hrs. theory - 45 lab — 60 ct. hrs.

URH 135 Plant Propagation (N) ..... 3 cr. hrs.

Prerequisites suggested: URH 101, URH 106.

The theory and practical application of propagation by seed, cuttings, budding, grafting and layering with proper usage of chemical root stimulators.

45 hrs. theory - 23 lab — 68 ct. hrs.

URH 136 Horticulture Industries (N) . . . . . 2 cr. hrs.
A survey and study of the career opportunities in the greenhouse, turf, nursery, & landscape industries.
0 hrs. theory-45 lab 45 ct. hrs.

URH 145 Sprinkler System Design (N) . . . . . 3 cr. hrs.
Functional components of a residential sprinkler system, design principles, and hydraulic analysis are studied in preparing a residential irrigation design.
30 hrs. theory - 23 hrs. lab 53 ct. hrs.

URH 146 Sprinkler System Installation (N). . . . . 3 cr. hrs.
Prerequisites suggested: URH 145.
An automatic sprinkler system is installed from a design drawing following preparation of a parts list and cost estimating of the project.
15 hrs. theory - 45 lab 60 ct. hrs.

URH 155 Arboriculture (N) . . . . . 2 cr. hrs.
Selection, planting and care of trees in the Rocky Mountain area.
15 hrs. theory - 23 hrs. lab 38 ct. hrs.

URH 200 Greenhouse & Field Experience (N). . . . . 3 cr. hrs.
Prerequisites suggested: URH 100, URH 101, URH 125
Practical experience in producing florist crops with emphasis upon learning the green plants. Field trips and outside work will vary with the season.
15 hrs. theory-45 hrs. lab 60 ct. hrs.

URH 205 Nursery Management (N) . . . . . 3 cr. hrs.
Prerequisites suggested: URH 100, URH 101, URH 106, URH 125.
Propagation, planting, crop rotation, busisness and cultural practices involved in operating a nursery.
30 hrs. theory-23 hrs. lab 53 ct. hrs.

URH 206 Interior Landscape Design (N). . . . . 3 cr. hrs.
Prerequisites suggested: URH 101, URH 125
Design, use and maintenance of green plants in public and commercial settings.

URH 210 Landscape Management (N) . . . . . 3 cr. hrs.
Prerequisites suggested: URH 101, URH 106, URH 125.
The application of cultural techniques, problem diagnosis and maintenance practices for landscape areas.
45 hrs. theory - 0 lab 45 ct. hrs.

URH 215 Greenhouse Management (N) . . . . . 3 cr. hrs.
Prerequisites suggested: URH 101, URH 125.
Environmental control, culture and production methods employed in producing some of the leading florist crops.
45 hrs. theory - 0 lab 45 ct. hrs.

URH 216 Landscape Surveying (N). . . . . 3 cr. hrs.
The student will use surveying equipment in the following applications: grade establishment, beam construction, contouring, drainage, etc. Cut and fill quantities will be calculated.
15 hrs. theory - 45 hrs. lab 60 ct. hrs.

URH 225 Horticulture Equipment (N). . . . . 3 cr. hrs.
Practical experience is gained in the operation of landscaping and turf equipment: tractors, front end loaders, etc. along with their proper servicing and maintenance.
15 hrs. theory - 45 hrs. lab 60 ct. hrs.

URH 226 Horticulture Business Operations (N). . . 2 cr. hrs.
A study of the methods and problems involved in operating a small business.
30 hrs. theory - 0 lab 30 ct. hrs.

URH 235 Diseases and Pests (N) . . . . . 4 cr. hrs.
Identification, prevention and control of diseases and insect problems. Special consideration will be given to the use of insecticides and other chemicals.
45 hrs. theory-23 hrs. lab 68 ct. hrs.

URH 236 Basic Landscape Construction Estimating and Bidding (N) . . . . . 4 cr. hrs.
Prerequisites suggested: URH 105, URH 106, URH 125, URH 205, URH 216, URH 225, Math.
Students will learn basic landscape construction methods and equipment operation, i.e. grading and sod laying, seeding, retaining wall and step construction, edging, mulching techniques and estimating costs.
45 hrs. theory-30 hrs. lab 75 ct. hrs.

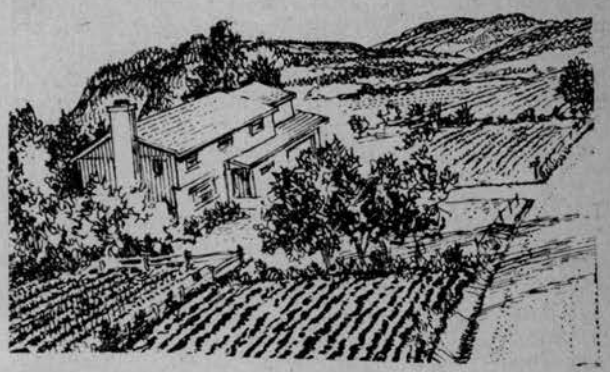
URH 245 Turf Production & Management (N). . . . . 4 cr. hrs.
Prerequisites suggested: URH 101, URH 125.
The principles and practices involved in the establishment and maintenance of turf grass for parks, golf courses and home grounds.
30 hrs. theory - 45 hrs. lab 75 ct. hrs.

URH 246 Advanced Landscape Planning (N) . . . . . 3 cr. hrs.
Prerequisites suggested: URH 105, URH 106, URH 115, URH 116,URH 125, URH 216, URH 225, URH 236
Practical experience in drafting, design principles and cost estimating of commercial projects. Emphasis is placed upon developing a landscape portfolio.
15 hrs. theory-45 hrs. lab 60 ct. hrs.

URH 255 Horticulture Management (N) . . . . . 2 cr. hrs.
Problem solving employer-employee relationships, motivations, morale buildings, and goal orientation.
30 hrs. theory - 0 lab 30 ct. hrs.

URH 256 Landscape Perspective Drawing (N) . . . . 3 cr. hrs.
Prerequisites suggested: URH 101, URH 105, URH 116.
Students will learn how to illustrate landscape plans in three dimensional drawings.
15 hrs. theory - 45 hrs. lab 60 ct. hrs.

URH 297 Cooperative Work Experience (N). . . . . 4 cr. hrs.
The student is placed at a work station, somewhere in the Metropolitan Denver area, which is related to his educational program and occupational objective. He works under the immediate supervision of experienced personnel at the business, industry or agency involved, with a College instructor providing coordination. Prerequisites for enrollment in Cooperative Work Experience are permission of the instructor and approval of the Division Director. 1 hour per week in class.
15 hrs. theory - 135 hrs. lab 150 ct. hrs.



URBAN PLANNING TECHNOLOGY (R)

Associate Degree Program

This program is designed to prepare individuals with job-entry skills for the urban planning field. The program is intended to prepare the student for private sector and public sector employment. It will deal with local, county, regional and state concerns.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
UPT 100	Introduction to Planning	3	45
UPT 105	Data Collecting Techniques & Evaluation I	5	90
UPT 106	Data Collecting Techniques & Evaluation II	5	90
UPT 108	Problems in Urban Planning	3	45
UPT 109	Statistics for Planners	3	45
UPT 115	Data Processing for Planners	5	90
UPT 201	Map Reading & Photo. Interpretation I	5	90
UPT 202	Map Reading & Photo. Interpretation II	5	90
UPT 205	Drafting for Urban Planning	6	105
UPT 206	Planning Law	3	45
UPT 207	Transportation Planning	3	45
		46	780

Required Related Courses

	English Elective	6	90
	Math Elective	12	180
	Social Science Elective	3	45
	TOTAL REQUIRED HOURS	67	1095

Additional Major Courses

UPT 215	Planning for Solid Waste	3	45
UPT 216	Urban Environment Decision Making	3	45
UPT 217	Land Use & the Quality of Life	6	105

URBAN PLANNING TECHNOLOGY (R)

UPT 100 Introduction to Planning. . . . . 3 Cr. Hrs.
An introduction to the planning process as it is currently operating in the urban setting with an emphasis on basic planning philosophy, techniques and the function of the planning technician in development of solutions to urban problems including mass transportation, housing and pollution.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 105 Data Collecting Techniques and Evaluation I . . . . . 5 Cr. Hrs.
Basic principles of sampling, survey designs, systems of sampling, methods of estimation, problem definition, evaluation of information collected, organization and preparation of reports including techniques of collecting, interpreting and presenting information useful in urban planning.
45 Hrs. Theory - 45 Hrs. Lab — 90 Ct. Hrs.

UPT 106 Data Collecting Techniques and Evaluation II. . . . . 5 Cr. Hrs.
Prerequisite: UPT 105
Preparation of statistical reports for establishment of an on-going data base emphasizing cybernetic looping and information upgrading for cities and counties.
45 Hrs. Theory - 45 Hrs. Lab. — 90 Ct. Hrs.

UPT 108 Problems in Urban Planning . . . . . 3 Cr. Hrs.
Social, economic and psychological factors which influence social stratification and their effect on urban planning. Urban planning issues and problems of contemporary importance such as social attitudes, public opinion, etc.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 109 Statistics for Planners . . . . . 3 Cr. Hrs.
Data handling, methods of analysis and interpretation, application of techniques to gather data rather than development of formulas, with examples drawn from urban planning situations.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 115 Data Processing for Planners. . . . . 5 Cr. Hrs.
Effective use of automatic equipment necessary to meet the information needs of urban planners. Study of the basic data processing concepts and procedures including management information systems, the hardware and software necessary for system implementation and intra-firm and agency coordination.
45 Hrs. Theory - 45 Hrs. Lab — 90 Ct. Hrs.

UPT 201 Map Reading and Photo. Interpretation I. . . . . 5 Cr. Hrs.
Interpretation and information gathering from maps and aerial photos. Use and application of black and white photos of urban planning. Final project will be an evaluation of an area for specific proposal.
45 Hrs. Theory - 45 Hrs. Lab — 90 Ct. Hrs.

UPT 202 Map Reading and Photo. Interpretation II . . . . . 5 Cr. Hrs.
Prerequisite: UPT 201
Interpretation and information gathering from maps and color aerial photos. Extending the theory and practice of black and white photo. interpretation to colored and stereoscopic photos.
45 Hrs. Theory - 45 Hrs. Lab — 90 Ct. Hrs.

UPT 205 Drafting for Urban Planning. . . . . 6 Cr. Hrs.
Problems involving the construction, layout and rendering of pictorial illustrations of a technical nature, including exploded assemblies and assembled sections, using axonometric and perspective projection.
60 Hrs. Theory - 45 Hrs. Lab — 105 Ct. Hrs.

UPT 206 Planning Law . . . . . 3 Cr. Hrs.
An introduction to the legal basis for planning including such topics as the basic court cases and Federal laws which delineate the planning function in the urban setting, the State enabling legislation and a review of local jurisdiction ordinance forms. This is followed by a review of the process which is required for the passage of new state and local laws.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 207 Transportation Planning . . . . . 3 Cr. Hrs.
This course is an introduction to the purpose,techniques and limitations of urban transportation planning. The use of output from the planning process as an operational tool and the limitations on accuracy will be covered.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 215 Planning for Solid Waste . . . . . 3 Cr. Hrs.
A study of the sources of solid waste and the problems relative to land use, water and people. Traditional, new and experimental methods of control and planning for abatement will be identified.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 216 Urban Environment Decision Making . . . . . 3 Cr. Hrs.
This course brings together the techniques involved in urban decision making including ecological, social, economic and cultural considerations. The concepts of Environmental Impact Statements required by Federal law will be explored.
45 Hrs. Theory — 45 Ct. Hrs.

UPT 217 Land Use & the Quality of Life . . . . . 6 Cr. Hrs.
The student will gain an awareness of municipal government and citizen processes involved in the local land use decision making systems. Integration of project management techniques and the evaluations of actual environmental impact development proposals for municipalities.
60 Hrs. Theory - 45 Hrs. Lab. 105 Ct. Hrs.

WATER-WASTEWATER TECHNOLOGY PROGRAM (R)
Wastewater Treatment Program
Associate Degree

This program is designed to prepare students for entry level employment in wastewater treatment plants. Main emphasis is placed on wastewater plant operations, procedures, problems and costs.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
WWT 100	Intro. to Water-Wastewater	3	45
WWT 105	Specific Calculations for W/W	4	60
WWT 106	Mechanical/Physical Treatment	2	30
WWT 107	Sludge Treatment	3	45
WWT 119	W/W Standard Methods I	5	90
WWT 120	W/W Equipment Maintenance	2	30
WWT 200	Hydraulics for W/W	5	90
WWT 205	Prime Movers & Liquid Transfer	5	90
WWT 206	Blueprint Reading for W/W	5	90
WWT 207	Biological Treatment	3	45
WWT 210	W/W Standard Methods II	5	90
WWT 216	W/W Standard Methods III	5	90
WWT 217	W/W Disinfection Techniques	3	45
WWT 297*	Cooperative Work Experience	1-4	45-180
		51-54	885-1020

*Students who are not presently employed in the profession will be required to take a minimum of 4 credit hours of WWT 297, Cooperative Work Experience, before they can receive their associate degree.

Required Related Courses

English Elective	3	45
Math Elective	3	45
Physics Elective	4	60
	10	150
TOTAL REQUIRED HOURS	61-64	1035-1170

Additional Major Courses

WWT 108	Advanced Treatment	4	60
WWT 118	Wastewater Collections	3	45
WWT 121	Public Relations for Water-Wastewater	3	45
WWT 126	Wastewater Cert. Rev. C&D	3	45
WWT 208	W/W Administration & Finance	3	45
WWT 219	Water Quality Control	3	45
WWT 225	Sludge Disposal & Chemical Recovery	2	30
WWT 226	T.V. Surveillance of Collection System	5	90
WWT 299	Independent Study	1-4	45-180

WATER-WASTEWATER TECHNOLOGY PROGRAM (R)
Water Treatment Program
Associate Degree

This program is designed to prepare students for entry level employment in jobs related to various water treatment methods. Main emphasis is placed on water plant operations, procedures, problems and costs.

Required Major Courses

Course No.	Title	Cr. Hrs.	Ct. Hrs.
WWT 100	Introduction to Water-Wastewater	3	45
WWT 105	Specific Calculations for W/W	4	60
WWT 115	Water Sources & Supply	3	45
WWT 116	Water-Pre-Treatment Processes	2	30
WWT 117	Filters & Water Filtration Practices	3	45
WWT 119	W/W Standard Methods I	5	90
WWT 120	W/W Equipment Maintenance	2	30
WWT 200	Hydraulics for W/W	5	90
WWT 205	Prime Movers & Liquid Transfer	5	90
WWT 206	Blueprint Reading for W/W	5	90
WWT 209	Clarification Processes for Water	3	45
WWT 210	W/W Standard Methods II	5	90
WWT 216	W/W Standard Methods III	5	90
WWT 217	W/W Disinfection Techniques	3	45
WWT 297*	Cooperative Work Experience	1-4	45-180
		54-57	930-1065

*Students who are not presently employed in the profession will be required to take a minimum of 4 credit hours of WWT 297, Cooperative Work Experience, before they can receive their associate degree.

Required Related Courses

English Elective	3	45
Math Elective	3	45
Physics Elective	4	60
	10	150
TOTAL REQUIRED HOURS	64-67	1080-1215

Additional Major Courses

WWT 108	Advanced Treatment	4	60
WWT 109	Water Distribution — Basic	3	45
WWT 110	Meter Shop Operations	3	45
WWT 120	W/W Equipment Maintenance	2	30
WWT 121	Public Relations for W/W	3	45
WWT 122	Basic Electricity for Water/Wastewater	3	45
WWT 125	Water Cert. Rev. C&D	3	45
WWT 208	W/W Administration & Finance	3	45
WWT 215	Instrumentation & Control	5	90
WWT 218	Intro. to Computers for W/W	5	90
WWT 219	Water Quality Control	3	45
WWT 225	Sludge Disposal & Chemical Recovery	2	30
WWT 299	Independent Study	1-4	45-180

WATER-WASTEWATER TECHNOLOGY (R)
Associate Degree

WWT 100 Introduction to Water-Wastewater . . . . 3 Cr. Hrs.
This course is designed to introduce the student to the characteristic effects of wastewater upon water quality. Treatment operations used to remove objectionable pollutants. Characteristics of water, water treatment, and protection of ground water.
45 Hrs. Theory 45 Ct. Hrs.

WWT 105 Specific Calculations for WW . . . . . 4 Cr. Hrs.
A course designed to familiarize a student with the various math calculations associated with the field of water and wastewater. General areas of study will include manipulation of conversion factors, geometric figures, organic and hydraulic loading problems and chemical dosage and solution problems.
60 Hrs. Theory 60 Ct. Hrs.

WWT 106 Mechanical Physical Treatment . . . . . 2 Cr. Hrs.
The course will include the principles of pre-treatment of wastewater, study of screens and racks, communution grit removal and grit chambers, and pre-aeration. Also studied will be the technical processes of sedimentation and flocculation.
30 Hrs. Theory 30 Ct. Hrs.

WWT 107 Sludge Treatment. . . . . 3 Cr. Hrs.
A course designed to give the student a basic understanding of the principles of sludge digestion, sludge drying on sand beds, and the use of chemicals for conditioning. Also covered will be vacuum filtration, flotation and centrifuging.
45 Hrs. Theory 45 Ct. Hrs.

WWT 108 Advanced Treatment . . . . . 4 Cr. Hrs.
Introduction to some of the more sophisticated treatment methods used in water and wastewater. Tertiary treatment methods are discussed such as ion exchange, activated carbon and reverse osmosis. Disinfection will also be discussed.
60 Hrs. Theory 60 Ct. Hrs.

WWT 109 Water Distribution — Basic . . . . . 3 Cr. Hrs.
A course designed to introduce the student to the water distribution system and its component parts, operation and equipment used. Some specifics include distribution and service fittings, tappings, valves, hydrants, meters and installation, maintenance and cleaning of water mains.
45 Hrs. Theory 45 Ct. Hrs.

WWT 110 Meter Shop Operations . . . . . 3 Cr. Hrs.
A course designed to show how to set up a routine meter repair program. Topics to be covered will be types of meters, determination of meter accuracy, selection of meters, repair of meters, field installation and testing, and the care and protection of meters.
45 Hrs. Theory 45 Ct. Hrs.

WWT 115 Water Sources and Supply . . . . . 3 Cr. Hrs.
A study of the aspects of Water Sources and Supply. Included topics will be surface water, ground water, water storage, effects of storage, water shed protection and raw water transmission.
45 Hrs. Theory 45 Ct. Hrs.

WWT 116 Water Pre-Treatment Processes . . . . . 2 Cr. Hrs.
A study of treatment processes available to operations prior to conventional treatment processes. Topics of study will be: self-purification, pre-chlorination, pre-sedimentation, water shed protection, and lab analysis.
30 Hrs. Theory 30 Ct. Hrs.

WWT 117 Filters and Filtration Practices. . . . . 3 Cr. Hrs.
A study of the principles of filtration and the various types and methods used in the filtration processes. Included studies will be slow sand, rapid sand, mixed media, pressure and diatomaceous-earth filters.
45 Hrs. Theory 45 Ct. Hrs.

WWT 118 Wastewater Collection Systems. . . . . 3 Cr. Hrs.
The course will develop an understanding of information and procedures used in design, construction, and maintenance of sanitary sewers, lift stations and sewage pumps, measurement of wastewater flow and sewage disposal for residences and institutions through discussion.
45 Hrs. Theory 45 Ct. Hrs.

WWT 119 W/W Standard Methods I . . . . . 5 Cr. Hrs.
This course is designed to familiarize the student with the basic water/wastewater testing procedures for dissolve oxygen analysis, pH determination and turbidity testing according to Standard Methods of Water/Wastewater examination procedures. Other topics covered will be lab safety, identification of lab equipment and ordering of lab supplies.
45 Hrs. Theory-45 Hrs. Lab 90 Ct. Hrs.

WWT 120 Water-Wastewater Equipment Maintenance . . . . . 2 Cr. Hrs.
A course designed to make the student aware of sound practices in general equipment repair and maintenance. Specific tools, protective coatings and record keeping are to be stressed.
30 Hrs. Theory 30 Ct. Hrs.

WWT 121 Public Relations for Water-Wastewater . . . . . 3 Cr. Hrs.
This course is designed to acquaint WW students with Public Relations and its application to the Water-Wastewater Industry. Topics to be discussed will be: tools available for a public relations program, obtaining public support, and how to work directly with the public.
45 Hrs. Theory 45 Ct. Hrs.

WWT 122 Basic Electricity for Water-Wastewater . . . . . 3 Cr. Hrs.
An elementary study of electricity, electrical terms and how to trouble shoot basic electrical problems that may be incurred in day-to-day plant operations.
45 Hrs. Theory 45 Ct. Hrs.

WWT 125 Water Cert. Rev. C&D . . . . . 3 Cr. Hrs.
This course is designed to prepare students for the Colorado Water Operator's certification tests, Level C&D. Materials covered will be 1) methods of study 2) test taking 3) general knowledge of water treatment processes.
45 Hrs. Theory 45 Ct. Hrs.

WWT 126 Wastewater Cert. Rev. C&D. . . . . 3 Cr. Hrs.
This course is designed to prepare students for the Colorado Wastewater Treatment Plant Operator's certification exam, Level C&D. Materials covered will include 1) methods of study 2) taking exams 3) general principles of wastewater treatment plant operators.
45 Hrs. Theory 45 Ct. Hrs.

WWT 200 Hydraulics for Water-Wastewater . . . . . 5 Cr. Hrs.
Introduction to principles of density, specific gravity, Pascal's Law, pressures, force, heads, friction loss, flow measurement and other topics related specifically to liquids and their properties in water and wastewater operations.
45 Hrs. Theory - 45 Hrs. Lab 90 Ct. Hrs.

WWT 205 Prime Movers and Liquid Transfer . . . . . 5 Cr. Hrs.
A course designed to familiarize the student with pumps, pump characteristics, and pump operation and maintenance. Topics to be covered will include: pump nomenclature, pump selection, in-depth study of various types of pumps, and installation, operation and maintenance of the pump and its power sources.
45 Hrs. Theory - 45 Hrs. Lab 90 Ct. Hrs.

WWT 206 Blueprint Reading for Water-Wastewater . . . . . 5 Cr. Hrs.
Instruction in reading and interpreting drawings of treatment works, equipment, distribution and collection systems and introduction to different types of graphical presentation and interpretations and use of various graphs and monographs.
45 Hrs. Theory - 45 Hrs. Lab 90 Ct. Hrs.

WWT 207 Biological Treatment . . . . . 3 Cr. Hrs.
A study of how biological treatment is used in the field of wastewater treatment. Included topics that will be covered will be: activated sludge, trickling filters, and oxidation ponds.
45 Hrs. Theory 45 Ct. Hrs.

WWT 208 Water-Wastewater Administration & Finance . . . . . 3 Cr. Hrs.
Sound practices in project service costs, rate structure, municipal finance, safety programs and personnel practices are to be taught.
45 Hrs. Theory 45 Ct. Hrs.

WWT 209 Clarification Processes for Water . . . . . 3 Cr. Hrs.
A study of coagulation, flocculation, and sedimentation processes. Studies will include chemical dosage, mixing techniques. Also included will be an in-depth study of the equipment used in these processes.
45 Hrs. Theory 45 Ct. Hrs.

WWT 210 W/W Standard Methods II . . . . . 5 Cr. Hrs.
A continuation of Standard Methods I with emphasis on performing the following water purification and wastewater treatment laboratory tests, B.O.D., phosphorous, nitrogen, taste, odor, color, suspended solids, C.O.D., alkalinity and hardness. Studies will also include the correct methods for sampling and monitoring a water or waste-water treatment process.
45 Hrs. Theory-45 Hrs. Lab 90 Ct. Hrs.

WWT 215 Instrumentation and Control . . . . . 5 Cr. Hrs.
An elementary study of hydraulic, pneumatic, mechanical, electrical and components. It includes a basic description, analysis, and explanation of operation of instrumental controls for water and wastewater plants. Typical performance characteristics, accuracy and application of instruments are studied.
45 Hrs. Theory - 45 Hrs. Lab 90 Ct. Hrs.

WWT 216 W/W Standard Methods III (Microbiological) . . . . . 5 Cr. Hrs.
A course designed to familiarize the student with the procedures for isolating and identifying microorganisms associated with the treatment of water and sewage. Topics to be covered will be pathogenic organisms, microorganisms for secondary treatment processes, fecal chloroform testing (MF) and (MTF) and control tests for aerobic and anaerobic digestion.
45 Hrs. Theory-45 Hrs. Lab. 90 Ct. Hrs.

WWT 217 W/W Disinfection Techniques. . . . . 3 Cr. Hrs.
A study of the most common methods of disinfection — chlorination — as well as the lesser used methods utilizing ozone, iodine, bromine, and other chemicals. Studies will include analyzing and calculating dosage, maintenance and operation of chemical equipment.
45 Hrs. Theory 45 Ct. Hrs.

WWT 219 Water Quality Control . . . . . 3 Cr. Hrs.
This is a course designed to familiarize the W/W student with the importance of water quality control. Emphasis will be placed in the development of a quality control program in a water or a wastewater facility. Topics to be covered will be the wastewater permit system, water quality standards, data gathering and data reporting.
45 Hrs. Theory 45 Ct. Hrs

WWT 225 Sludge Disposal & Chemical Recovery . . . . . 2 Cr. Hrs
A study of the methods used for conditioning, drying, and removal of the sludge material from water treatment plants. Topics to be discussed will be methods of recovering the chemicals used in water treatment and their reuse in the treatment plant.
30 Hrs. Theory 30 Ct. Hrs

WWT 226 T.V. Surveillance of Collection Systems . . . . . 5 Cr. Hrs
A course designed to introduce the student to T.V. inspection of collection systems. Topics to be covered will be basic T.V. inspection techniques, how T.V. and video functions, trouble shooting of T.V. and video systems, and the development of reports and files.
45 Hrs. Theory - 45 Hrs. Lab 90 Ct. Hrs

WWT 297 Cooperative Work Experience . . . . . 1-4 Cr. Hrs
In the Water-Wastewater Technology program, cooperative work experience is a part of the course of study. The student is placed at a work station somewhere in the Metropolitan Denver area which is related to his educational program and occupational objective. He works under the immediate supervision of experienced personnel at the business, industry or agency involved with a College instructor providing coordination. Pre-requisites for enrollment in Cooperative Work Experience are permission of the instructor and approval of the Division Director.
15 Hrs. Theory - 45-180 Hrs. Coop 45-180 Ct. Hrs

WWT 299 Independent Study . . . . . 1-4 Cr. Hrs.
The Course provides opportunity for a student to study intensively a specific topic of interest under the direction of a qualified faculty member. Permission to enroll for independent study must be obtained from the Division Director and the assigned instructor. The number of credit hours to be allowed for successful completion of the course will be determined cooperatively by the instructor and the Division Director.
23-90 Hrs. Indep. Study . . . . . 45-180 Ct. Hrs.

STAFF AND FACULTY

CENTRAL ADMINISTRATION

President's Office

Lahti, Robert E. ..... President
Miller, Eldon L ..... Assistant to President

Automated Data Processing

Sanders, Robert J ..... Director

Affirmative Action

Martin, Theodore ..... Officer

Business Office

Lutes, Thomas R. ..... Business Manager
Miller, James L ..... Assistant to Business Manager

Campus Planning

Kula, Robert H. ..... Director

Controller

Cunningham, George E. ..... Controller
Ryan, Thomas E. ..... Assistant Controller

Institutional Research

Chang, Nai-Kwang ..... Vice President
Casto, Lawrence T. ..... Statistical Supervisor

Minority Programs

Perea, Jose A. ..... Vice President

Personnel

Taylor, Edwin M. ..... Director

Public Information

Smith, Mary M. ..... Officer

Purchasing

Donovan, William ..... Agent

Special Programs

Zgut, JoElen ..... Director

AURARIA CAMPUS

GENERAL ADMINISTRATION

Gonzales, Thomas ..... Campus Vice President
Rivera, Timothy ..... Assistant to the Vice President

AURARIA MEDIA CENTER

Anderton, Ray ..... Director
Barnes, Barry ..... Chief of Media Instruction
Brockman, Vivian ..... Chief of Campus Services

EDUCATIONAL OPPORTUNITY CENTER

Patterson, David ..... Director
MacNaughton, William ..... Assistant Director
Taylor, Michael ..... Assistant Director
Hodges, Geraldine ..... Assistant Coordinator
Geislinger, Frank ..... Counselor
Gutierrez, Gilbert ..... Counselor
Reece, Pauline ..... Counselor
Miller, Roosevelt ..... Coordinator Aide
Rencher, Elizabeth ..... Counselor Aide
Taoka, Susan ..... Counselor Aide

GENERAL STUDIES

Jaramillo, John F. ..... Dean of General Studies

COMMUNICATION AND ARTS

Hall, Marlene ..... Division Director
Brigham, Elizabeth ..... Instructor — English
Carter, Malvin ..... Instructor — Fine Arts
Fergason, Peggy ..... Instructor — English
Griego, Orlando ..... Instructor — Basic Education
Knauber, David ..... Instructor — Communications
Lehman, Patricia ..... Instructor — Fine Arts
Lopez, Rafael ..... Instructor — Music
Miles, Kathleen ..... Instructor — English Composition
Mosco, Patty ..... Instructor — English/Communications
Padilla, Francisco ..... Instructor — Spanish
Paul, Marilyn ..... Instructor — Reading
Phillips, Pamela ..... Instructor — Literature/Drama
Richards, Charles ..... Instructor — English/Basic Education
Salaz, Roberto ..... Instructor — Spanish/Chicano Studies
Siddeek, Maria ..... Instructor — Humanities/Literature
Simons, Susan ..... Instructor — English
Spencer, Leslie ..... Instructor — English

COMMUNITY SERVICES

Collier, Sara ..... Coordinator

LEARNING DEVELOPMENT CENTER

Open ..... Coordinator
Conway, Sally ..... Instructor
Frye, Yvonne ..... Instructor
Gladue, Diane ..... Tutor Assistant
Loggins, Zenia ..... Instructor
Martinez, Cleopatra ..... Instructor
Womack, Susan ..... Testing Aide

SCIENCE AND MATHEMATICS

Allen, Jim ..... Division Director
Biagi, Paul ..... Instructor — Physics
Blumenthal, Elliott ..... Instructor — Biology
Dallas, William Keith ..... Instructor — Math
DeRoos, Barry ..... Instructor — Chemistry
Foreman, Maxine ..... Instructor — Biology
Johnson, Sidney ..... Instructor — Math
Koop, Janice ..... Instructor — Math
Lundgren, Linda ..... Instructor — Biology
McCullough, Vivian ..... Instructor — Math
Valazquez, Janet ..... Instructor — Basic Science

SOCIAL SCIENCES

Larimer, George ..... Division Director
Baade, Randolph ..... Instructor — Geography/Political Science
Blasius, Ronald ..... Instructor — Philosophy/Psychology
Curtis, Ivory ..... Instructor — Economics/Political Science
Dolfinger, David ..... Instructor — Psychology
Hanley, Berta ..... Instructor — Psychology
Hoffman, Robert ..... Instructor — Psychology
Khajeaian, Abbas ..... Instructor — Sociology
Killeen, John ..... Instructor — Psychology/Sports
McCarthy, George ..... Instructor — History
Muse, Cynthia ..... Instructor — Psychology/Black Studies
Noyes, Lance ..... Instructor — Sociology/Criminology/Black Studies
Padilla, Roberto ..... Instructor — Psychology/Chicano Studies
Susman, Mary Beth ..... Instructor — Sociology/Women's Studies

OCCUPATIONAL STUDIES

Brown, James ..... Dean

BUSINESS OCCUPATIONS

Kossik, Joseph ..... Division Director
Blan, Santos ..... Instructor — Accounting
Cordova, Lucille ..... Instructor — Business Lab
Fekete, Anita ..... Instructor — Business Education
Gilmore, Marjorie ..... Instructor — Business Education
Kleysteuber, Helen ..... Instructor — Secretarial Science
Krane, John ..... Instructor — Management
Mares, Patricia ..... Instructor — Accounting
Norden, Robert ..... Instructor — Accounting
Pigford, Lois ..... Instructor — Business Education
Thomas, Judy ..... Instructor — Business Education
White, Eugene ..... Instructor — Data Processing

HEALTH OCCUPATIONS

Davis, Mary ..... Division Director
Anthony, Barry ..... Instructor — Diagnostic X-Ray
Bisch, Marjorie ..... Instructor — Nursing
Elrod, Rachel ..... Instructor — Nursing
Faubion, Betty ..... Coordinator — Radiation Therapy
Hamann, Loy ..... Instructor — Nursing
Kumagai, May ..... Instructor — Nursing
Long, Jack ..... Instructor — Diagnostic X-Ray
Mahoney, Rosemary ..... Instructor — Nursing
McCarthy, Margaret ..... Instructor — Diagnostic X-Ray
Miller, Marcella ..... Instructor — Nursing
Mitchell, Loretta ..... Instructor — Medical Office Management
Mutzebaugh, Carole ..... Coordinator — Nursing Program
Ortega, Donna ..... Instructor — Nursing

Penka, Willa ..... Instructor — Nursing
Perkins, Deborah ..... Coordinator — Nuclear Medicine
Roberts, Evelyn ..... Coordinator — Diagnostic X-Ray
Salaiz, Theodore ... Instructor — Operating Room Technician

INDUSTRIAL OCCUPATIONS

Hall, Clemmie ..... Division Director
Beisswanger, Carl ... Instructor — Appliance & Refrigeration
Breslin, Edward ..... Instructor — Electronics
Garbutt, Beth ..... Instructor — Commercial Art
Gleeson, Michael ..... Instructor — Commercial Art
Haney, Patrick ..... Instructor — Graphic Arts
Holmes, Theodore ..... Instructor — Drafting
Lowry, Jack ..... Instructor — Graphic Arts
Pacheco, Nelson ..... Instructor — Business Machines
Rogers, Guy ..... Instructor — Drafting/Tech Illustration
Ross, William ..... Instructor — Automotive
Smith, Frederick ..... Instructor — Automotive
Thomas, Arthur ..... Instructor — Welding
Whiting, Ray ..... Instructor — Photography
Wohlauer, Ronald ..... Instructor — Photography
Wood, Robert ..... Instructor — Welding

SERVICE OCCUPATIONS

Rucker, Jennie ..... Director
Battey, Robert ..... Instructor — Paralegal
Birdaee, Charles ..... Instructor — Hotel/Motel
Moyle, Barbara ..... Instructor — Child Care
Parker, George ..... Instructor — Travel & Conference
Paul, Patt ..... Instructor — Library Media Technology
Robnett, Harris ..... Instructor — Information Media
Sheppard, William ..... Instructor — Paralegal
Vaughns, Louis .... Instructor — Institutional Housekeeping
Williams, Vicki ..... Instructor — Social Work
Young, Sung ..... Instructor — Senior Citizens

STUDENT SERVICES

Van de Visse, Martin ..... Dean

ADMISSIONS AND RECORDS

Open ..... Registrar
Gallegos, George ..... Assistant Registrar

COUNSELING

Ulrich, Bud ..... Director
Brooks, Larry ..... Vocational Guidance Specialist
Cisco, Julia ..... Counselor Assistant
Farmer, Jenny ..... Counselor
Hamilton, Delmar ..... Counselor Aide
Harris, Ottawa ..... Counselor
Martinez, Ed ..... Counselor
Perez, Louise ..... Counselor Aide

CENTER FOR PHYSICALLY DISADVANTAGED

Hunsaker, Lil ..... Coordinator

FINANCIAL AID

Cooper, Garrett ..... Supervisor
Barber, Lee ..... Para-Professional
Leary, Kathleen ..... Coordinator
Zamarripa, Robert ..... Coordinator

JOB PLACEMENT

Open ..... Coordinator

STUDENT ACTIVITIES

Young, Ronald ..... Coordinator
Hughes, Eric ..... Assistant Coordinator

STUDENT HEALTH SERVICES

Jacquez, Rafael ..... Health Counselor

VETERAN'S AFFAIRS

Pelter, Joseph ..... Coordinator

WOMEN'S CENTER

Copeland, Shyrel ..... Coordinator

NORTH CAMPUS

GENERAL ADMINISTRATION

John H. Swenson ..... Campus Vice President
Ronald R. Montoya ..... Assistant to the Vice President
David Braman ..... Director, Community Services
William Moore ..... Superintendent of Buildings & Grounds

GENERAL STUDIES

Martin Van Dyke ..... Dean

Communication and Arts

Dean E. McDonald ..... Director
Elvera C. Benavidez ... Instructional Associate — English & Language Lab
Michele D. Bowman ..... Instructor — Reading & English
Beth Brubaker ..... Instructor — Reading
Patricia A. Downing ..... Instructor — English
Treva I. French ..... Instructor — English & Literature
Donald A. Hoglin ..... Instructor — English & Literature
Julie A. Hudson ..... Instructor — Music
Ellen C. Lavroff ..... Instructor — Spanish
Jeanne C. Loyd ... Instructional Associate — Language Lab
Evelyn B. Makovsky ..... Instructor — English & Speech
Paul D. McLeran .... Instructor — English, Speech &Drama
Charles F. Ott ..... Instructor — Art
Barbara J. Preskorn ..... Instructor — Art
John F. Sabus ..... Instructor — Physical Education
Roger L. Sweeney ..... Instructor — English
Florence A. Ulman ..... Instructor — English & Speech
Marie L. Welliver ..... Instructor — Physical Education

Science and Mathematics

Robert E. Brown ..... Director
Raymond G. Boersema ..... Instructor — Mathematics
Edward F. Bouse ..... Instructor — Mathematics
Gwendolyn R. Burton ..... Instructor — Biology
Edward Doran ..... Instructor — Mathematics
Gerald R. Dotson ..... Instructor — Biology
Carla L. Hannaford ..... Instructor — Biology
James Hannaford ..... Instructor — Biology
Jesse Cheng-Fan I ..... Instructor — Chemistry
E. Glenn Kindle ..... Instructor — Mathematics
Aubrey P. Owen ..... Instructor — Mathematics
David C. Palmer ..... Instructor — Physics
Sharon K. Roffers ..... Instructor — Mathematics
Daniel J. Sukle ..... Instructor — Physics
Francis J. Sullivan ..... Instructor — Biology
Robert L. Taylor ..... Instructor — Chemistry
Paul J. Younger ..... Instructor — Mathematics

Social Sciences

Paul G. Graves ..... Director
David A. Amick ..... Instructor — Psychology
Michael D. Brasselero ..... Instructor — Economics
Garrett R. Carpenter ..... Instructor — Philosophy
Arthur A. Clark ..... Instructor — History
William A. Davis ..... Instructor — Political Science
David A. Dudley ..... Instructor — Geography
Kenneth T. Hunter ..... Instructor — Anthropology
Joseph J. Koch ..... Instructor — History
John A. Robinson ..... Instructor — History
Warren Schupbach ..... Instructor — Economics
Louis J. Van Dyke ..... Instructor — Psychology
James L. Wagoner ..... Instructor — Psychology

OCCUPATIONAL STUDIES

Donald R. Mankenberg ..... Dean

Business Occupations

Donald W. Archer ..... Director
Mary Ellen Bowe..... Instructor — Secretarial Science
William R. Christensen ..... Instructor — Management
Marian J. Collins ..... Instructor — Accounting
William E. Earle ..... Instructor — Secretarial Science
Jose C. Espinoza..... Instructor — Bilingual Office Careers
Nancy L. Frisby..... Instructor — Data Entry (Keypunch)
Ann C. Garrison ..... Instructor — Data Processing
Leo A. Giles ..... Instructor — Management
Joseph Gomez ..... Instructor — Data Processing
Barbara A. Langley ..... Instructor — Accounting
Ruth F. Mitchell.... Instructor — Business Labs/Secretarial
James E. Moore ..... Instructor — Management
Norma R. Napue ..... Instructor — Secretarial
Barbara A. Nickel ..... Instructor — Secretarial
Artie M. Owen ..... Instructor — Management
Joan M. Roberts ..... Instructor — Data Processing
Dorman W. Ruby..... Instructor — Accounting
James H. Terada ..... Instructor — Management
Henry Toy, Jr..... Instructor — Management
Ronald T. Walters ..... Instructor — Accounting
Alice L. Zamarripa..... Instructor — Basic Business

Health Occupations

Audrey Jones..... Director
Bettie Barnes..... Instructional Associate/Nursing
M. Sue Bradford ..... Instructional Associate/Nursing
Barbara G. Crenshaw ..... Instructor — Nursing
Carol A. Dennis..... Instructor — Nursing
Carol M. Edwards..... Instructor — Dental Assisting
Beverly B. Hale ..... Instructor — Respiratory Therapy
Sendia Harris ..... Instructor — Nursing
Evelyn Y. James..... Instructor — Nursing
Alma L. Mueller ..... Instructor — Nursing
Dorothy S. Pirolo ..... Instructor — Nursing
Judith F. Robinson ..... Instructor — Optometric Assisting
Janice Smith..... Instructor — Nursing
Robert Thomas ..... Coordinator — Health Occupations — Respiratory Therapy
Julie D. Trujillo ..... Instructor — Dental Assisting
Birdell B. West..... Coordinator—Health Occupations —Nursing

Industrial Occupations

Ralph Duncan ..... Director
Hugh B. Adams..... Instructor — Welding
Edwin L. Brown ..... Instructor — Welding
Donald E. Daffin..... Instructor — Auto Body
O. Acker Everett ..... Instructor — Consumer Electronics
William E. Fedro..... Instructor — Architecture Drafting
James W. Jarrell..... Instructor — Auto Body
Paul Maybury..... Instructor — Architecture Technology
Mitsuo Minamoto..... Instructor — Consumer Electronics
Everett W. Montoya, Jr..... Instructor — Machine Shop
William S. Payne..... Instructor — Mechanical Drafting
Joe G. Sanchez..... Instructor — Welding
Jacobus F. Semp ..... Instructor — Machine Shop
Roland H. Seward..... Instructor — Welding
Gary A. Sheldon..... Instructor — Auto Mechanics
Marvin L. Shivers ..... Instructor — Auto Mechanics
John R. Thomas..... Instructor — Electronics
Ole S. Thompson..... Instructor — Electronics
Jeffrey L. Tuffel ..... Instructor — Mechanical Drafting
Jack D. West..... Instructor — Machine Shop
Charles D. Wheeler..... Instructor — Electronics
William R. Wilcox ..... Instructor — Small Engines
Roy A. Winterhalder..... Instructor — Auto Body

Service Occupations

Gary J. Walker..... Director
Judy Cattell ..... Instructional Associate — CDA Program
William D. Hastings ..... Instructor — Food Service
Sherrie L. Kantor.. Instructor — Early Childhood Education
Helen M. Law..... Instructional Associate — Food Service
James E. McColloch..... Instructor — Urban Horticulture
James V. O'Shay ..... Instructor — Urban Horticulture
Elizabeth S. Pinar ..... Instructor — Dietetic Technology
Jacquie L. Schwartz ..... Coordinator — C.D.A.
Clydine Smith ..... Director — Lab School
Sarah S. Stuska ... Instructor — Early Childhood Education
James L. Vaden ..... Instructor — Food Science
Robert S. Wecal ..... Instructor — Urban Horticulture

STUDENT SERVICES

Orlando H. Trujillo ..... Dean

Admissions and Records

Morris G. Albright ..... Director and Registrar
Mark M. Boyko..... Assistant Registrar

Counseling

Kenneth B. Ashcraft ..... Director
Gerald N. Calvin..... Counselor
Alexander A. Carson ..... Counselor
Mary L. Casper..... Counselor
Edward M. Lang, Jr..... Counselor
Marshall T. Metz..... Counselor

Financial Aid

Ronald D. Thornton..... Coordinator

Job Development and Placement

Charles Epperson ..... Coordinator

Student Activities

Ben Romero ..... Officer

Childcare Center

Toni Davis ..... Director
Carolyn Winchell ..... Instructor — Childcare

Student Health Services

JoAnne Garcia..... Nurse
Beatrice Montoya ..... Night Nurse

Veterans Affairs

Vincent J. Amanna ..... Coordinator
Charles A. Paul ..... Assistant Coordinator

Center for the Physically Disadvantaged

S. Theodore Guttadore..... Director
T. F. Beyler..... Assistant Counselor
Tonya Bassett..... Interpreter/Tutor
Cal Carfrae..... Tutorial Specialist
Laurel Goodrich ..... Interpreter
John Kulick ..... Counselor for the Disabled
Magdalene Manuele... Counselor/Coordinator Deaf & Blind
Agnes Pino, R.N. ..... Health Specialist
Harold Vermeer ..... Counselor/Job Placement Specialist
Ron West ..... Tutorial Specialist
Jean Wahlstrom ..... Vocational Evaluator

Learning Development Center

Sandra J. Shipley..... Coordinator
Mary C. Boast ..... Instructor — Communications Lab
George D. Gallegos..... Instructor — Communications Lab
Jeanne Loyd..... Instructor — Language Lab
Hubert E. Zeches ..... Instructor — Communications Lab

Learning Materials Center

Clark C. Wong ..... Director
Josephine L. Hall..... Assistant Director
Mary K. Cain..... Assistant — Library Information Services
Ronald Jones ..... Media Specialist
Leo L. Robertson ..... Assistant — Technical Services
Betty A. Robinson ..... Librarian
David A. Sacher ..... Assistant — Audiovisual Services

Womens Resource Center

Sally S. Schneider-Robinson..... Coordinator
Georgetta Mitchell ..... Assistant Coordinator

RED ROCKS CAMPUS

GENERAL ADMINISTRATION

Smith, G. Owen . . . . . Campus Vice President
Hodgson, Kent . . . . . Assistant to the Vice President
Tangney, Sandra . . . . . Coordinator, Community Services
Sittner, George . . . Superintendent, Buildings and Grounds
Thayer, Gwen. . . . . Coordinator, Recruitment and Public Information

GENERAL STUDIES

Boast, William. . . . . Dean

Communication and Arts

Jenkins, Thomas M. . . . . Director
Arndt, Susan. . . . . Instructor — Art
Coen, Donald . . . . . Instructor — Art
Ely, Beverly J. . . . . Instructor — Humanities & Literature
Gordon, DeWitte, C. . . . . Instructor — English
Hoffman, Natalie J. . . . . Instructor — Occupational Support
Jaquith, Elizabeth . . . . . Instructor — Literature & English
Kohler, Hertha . . . . . Instructor — German
Maxwell, Thomas F. . . . . Instructor — Humanities
Nelson, Walter. . . . . Instructor — English
Nielsen, Thomas L. . . . . Instructor — Art & Ceramics
Pigford, Clementine. . . . Instructor — Occupational Support
Sais, Dianne Totten . . . . . Instructor — Art & Ceramics
Sapienza, Leonard J. . . . . Instructor — Literature & English
Sartor, Mary C. . . . . Instructor — Art & Jewelry
Sindt, Gloria J. . . . . Instructor — Occupational Support & Speech
Sweet, Benjamin C. . . . . Instructor — Humanities
Yohe, Bennett C. . . . . Instructor — English

Science and Mathematics

McLemore, Donald P. . . . . Acting Division Director
Alderman, Harry W. . . . . Coordinator, Applied Mathematics
Bell, William . . . . . Instructor — Chemistry
Bussian, Alfred E. . . . . Instructor — Physics
Edmondson, Robert D. . . . . Instructor — Chemistry
Hague, William S. . . . . Instructor — Biology
Intrery, Linda E. . . . . Instructor — Mathematics
Jinnette, Michael E. . . . . Instructor — Computer Science
Kokes, Jirina . . . . . Instructor — Physics
Lederer, Eric M. . . . . Instructor — Mathematics
MacDonald, Pamela B. . . . . Instructor — Biology
McLemore, Donald P. . . . . Instructor — Physics
Patterson, Charles G. . . . . Instructor — Earth Science
Perkins, P. Everett . . . . . Instructor — Biology
Salzman, John D. . . . . Instructor — Chemistry
Stanesco, John D. . . . . Instructor — Earth Science
Tomkinson, Charles J. . . . . Instructor — Mathematics
Townrow, John A. . . . . Instructor — Biology
Tuggle, Dorothy K. . . . . Instructor — Mathematics
White, Robert C. . . . . Instructor — Earth Science
Yee, Leland L. . . . . Instructor — Biology

Social Sciences

Nelson, David . . . . . Director
Courson, Ron. . . . . Instructor — Psychology
Culpin, Alan . . . . . Instructor — History
Cromwell, Bobbie . . . . . Instructor Associate — Economics
Grant, Zepha . . . . . Instructor — Women's History
Joy, Carla . . . . . Instructor — History
Larke, Chris . . . . . Instructor — Economics
McBroom, Emm . . . . . Instructor — Geography
Mojica, Humberto . . . . . Instructor — Philosophy
Mueller, Clark . . . . . Instructor — Political Science
Prince, Bob . . . . . Instructor — Anthropology
Scheib, Jim. . . . . Instructor — Economics
Schreibman, Walt . . . . . Instructor — Psychology
Townrow, Katherine . . . . . Instructor Associate — Psychology/Sociology
Valvatne, Laura. . . . . Instructor — Psychology
Wellisch, William . . . . . Instructor — Sociology
Zeiger, Judy. . . . . Instructor — Psychology

OCCUPATIONAL STUDIES

Huston, Harlan. . . . . Dean

Business Occupations

Davis, Howard. . . . . Director
Arnsparger, Jack . . . . . Instructor — Accounting
Boeder, Bill . . . . . Instructor — Business Management & Administration
Braswell, Michael . . . Instructor — Business Management & Administration
Carr, Carolyn . . . . . Instructor — Secretarial Science
Collins, Charlene . . . . . Instructor — Secretarial Technology
Cuckow, Fred . . . . . Instructor — Real Estate
Fellows, David. . . . . Instructor — Business Management & Accounting
Haddad, Don . . . . . Instructor — Business Management & Administration
Hobkirk, Macie . . . . . Instructor — Secretarial Technology
Howell, Robert . . . . . Instructor — Secretarial Technology
Johnson, Cheryl . . . . Instructor — Business Management & Administration
Klinger, Denise . . . . . Instructor — Secretarial Technology
Levine, Kent . . . . . Instructor — Business Management & Administration/Real Estate
Martien, Leonard . . . Instructor — Business Management & Administration
Oleski, Raymond . . . . . Instructor — Accounting
Sabell, Haruko . . . . . Instructor — Secretarial Studies
Salazar, Anita . . . . . Instructor — Secretarial Studies
Schultz, Kay. . . . . Instructor — Accounting
Wiebe, Vern . . . . . Instructor — Data Processing

Industrial Occupations

Cunningham, Joe H. . . . . Director
Yocum, Gilbert . . . . . Asst. Division Director
Ballard, Wade . . . . . Instructor — Diesel Mechanics
Birch, Johnie . . . . . Instructor — Automotive Mechanics
Brandt, Warren. . . . . Instructor — Civil Technology
Busnardo, Ernie. . . . . Instructor — Heavy Equipment
Conley, Everett . . . . . Instructor — Diesel Mechanics
Crabbe, T. George . . . . . Instructor — Industrial Electricity Technology & Industrial Instrumentation
Deaver, Larry. . . . . Instructor — Drafting
Feister, Clarence . . . . . Instructor — Drafting
Fisher, G. Edward. . . . . Instructor — Diesel Mechanics
Gale, Harold . . . . . Instructor — Bricklaying
Hedge, Delford . . . . . Instructor — Carpentry
Hilton, Craig. . . . . Instructor — Plumbing/Solar Energy
Hilton, Robert . . . . . Instructor — Plumbing
Hinz, Tim. . . . . Instructor — Carpentry
Holland, T. J. . . . . Instructor — Fluid Power
Hood, Robert . . . . . Instructor — Welding
Hulla, Edward . . . . . Instructor — Electronic Industrial/Commercial
Marquez, Rudy. . . . . Instructor — Fluid Power
Medina, Julius J. . . . . Instructor — Drafting
Melcher, Charles . . . . . Instructor — Industrial Electricity Technology & Industrial Instrumentation
Montano, Edwardo. . . . Instructor — Automotive Mechanics
Neunzert, Gaby. . . . . Instructor — Surveying
Plumb, Donald . . . . . Instructor — Automotive Mechanics
Rudden, Michael . . . . . Instructor — Welding
Rudden, Richard . . . . . Instructor — Bricklaying
Stephens, Carl . . . . . Instructor — Drafting
Stratton, Milt . . . Instructor — Electronic Digital Technology
Smith, Dick . Instructor — Electronic Industrial/Commercial
Terhorst, William "Jim" . . . . . Instructor — Carpentry
Turner, Louise. . . . . Instructor — Surveying
Walck, Charles . . . . . Instructor — Electronic Industrial/Commercial

Williams, Roy ..... Instructor — Electronics

Service and Health Occupations

Raughton, Jim ..... Director
Baden, Carol ..... Instructor — Nursing
Birza, Bruce ..... Instructor — Fire Science
Boringer, Fred ..... Instructor — Criminal Justice
Copley, Walt ..... Instructor — Criminal Justice
Counihan, Barbara ..... Instructor — Pre-elementary Education
Feeley, Tom ..... Instructor — Sanitary and Public Health Technology
Lewand, John ..... Coordinator, Fire Service
Lucero, Frank ..... Instructor — Parks and Recreation Management
Roth, Harry ..... Instructor — Fire Science
Waite, Herb ..... Instructor — Sanitary and Public Health Technology
Wanzeck, Bill ..... Instructor — Criminal Justice
Wieder, Regina ..... Instructor — Pre-elementary Education

STUDENT SERVICES

Post, Richard ..... Dean

Admissions and Records

Sullivan, James L. ..... Registrar
Simpson, Lynn V. ..... Assistant Registrar
Dries, Cyndee ..... Adm. Aide
Ritter, David B. ..... Registrar's Aide

Counseling

Riley, Russell ..... Director
Adlfinger, Annette ..... Counselor
Anderson, Daniel ..... Counselor
Blackman, Robert ..... Counselor
Carrillo, Virginia ..... Counselor
Childers, Barbara ..... Counselor
Harrell, Judy ..... Counselor Associate
Harris, Roy ..... Counselor
Hurtado, Sandra ..... Counselor Aide
Ulibarri, Nicanor ..... Counselor Aide

Job Development and Placement

Porter, Harlan ... Job Development & Placement Specialist
Martinez, Eugene ..... Vocational Guidance Specialist

Veterans Affairs

Gilmer, Len ..... Coordinator

Student Activities

Corsentino, James ..... Student Activities Officer

Student Health Services

Greene, Nancy ..... Health Counselor

Learning Materials Center

Woods, Muriel E. ..... Director
Berg, Robert G., Jr. ..... Assistant Director
Connole, Thomas P. ..... Librarian
Harju, Nancy ..... LMC Assistant
Maher, Charles H., Jr. ..... LMC Assistant
Moyer, Karen ..... Librarian
Welsh, Janet A. ..... LMC Assistant

Center for the Physically Disadvantaged

Wooster, Alice ..... Director

LEARNING DEVELOPMENT CENTER

Poulter, Sally ..... Coordinator
Becker, Laurita ..... Communications Lab
Heitzman, Blake ..... Applied Mathematics
Johnson, Ann ..... General Education
Marks, Alan ..... General Education
Sefcik, Janet ..... Communications Lab
Vaiana, Mike ..... Communications Lab
Vizvary, J. C. ..... General Education

WOMEN'S RESOURCE CENTER

Heath, Josie ..... Coordinator

Notes

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