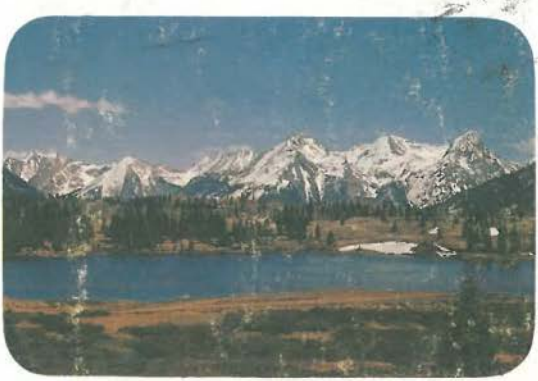

Mesa College

CATALOG • 1977-78

Grand Junction, Colorado

How to Apply for Admission

Students Attending College for the First Time

1. Secure an Application for Admission form from your high school principal or from the Admissions Office at Mesa College.
2. Complete the Application for Admission and have your high school office send a copy of your high school transcript to the Admissions Office at Mesa College. Applications may be filed at any time after the close of the first semester of the senior year in high school and must be in the Mesa College Admissions Office by August 15 for Fall Quarter and two weeks in advance of registration for Winter and Spring Quarters. (The College reserves the right to deny admission to any student who has not completed the application process by these dates.)
3. Upon receipt of your application and the $10 application fee the College will inform you of your admission status. (Admission status will be tentative until the record of the final semester of the senior year has been received.)
4. A completed Health Report form, signed by either the student or parent, must be on file in the Records Office before final acceptance is granted. (Form provided by Mesa College.)
5. A.C.T. scores must be in the Admissions and Records Office before final acceptance is granted. See your high school counselor for test dates.
6. Students who must live away from home must make arrangements for and secure approval of their housing through the office of the Director of Housing.
7. Prior to registration each applicant will receive additional information and preliminary registration instructions and materials.

Transfer Students

1. File with the Admissions Office at Mesa College:
   a. The Standard Application for Admission form. (A $10 application fee must accompany the admission application.)
   b. An official transcript of all credits earned from each college or university previously attended. Failure to list all institutions previously attended may result in loss of credit and/or dismissal.
   c. An official report of A.C.T. scores. (Transfer students who have not taken these tests previously must make arrangements with the Admissions Office to take them prior to registration.)
   d. An official transcript from the high school attended.
   e. A health report on a form provided by the College.

REGISTRATION AND COUNSELING TESTS

The college admission tests of the American College Testing (A.C.T.) Program are required, prior to registration, of all new students who plan to work toward a degree at Mesa College. It is recommended that prospective students take these tests during their senior year in high school. The tests are available at designated centers throughout the state and region on five different dates.

A $7.50 fee must be submitted with registration form to the Registration Department, American College Testing Program, P.O. Box 414, Iowa City, Iowa 52240, four weeks prior to the test date on which the student elects to take the test. A special residual test administration date will be arranged as a part of Fall and Winter Quarter registration periods for those who, for good reason, have not been able to take the test during one of the regularly scheduled national test dates. (A $12.50 test fee is charged on the residual testing date.) Detailed information regarding testing centers, dates, and registration supplies will be available through high school principals and counselors or from the Director of Admissions at Mesa College. College Board Scholastics Aptitude Test Scores (S.A.T.) are not required by Mesa College and will not excuse the student from the A.C.T. requirement.

MESA COLLEGE

Grand Junction, Colorado
81501

CATALOG
1977-78

STATEMENT ON EQUAL OPPORTUNITY

With respect to the admission and education of students, with respect to the availability of student loans, grants, scholarships, and job opportunities, with respect to the employment and promotion of teaching and non-teaching personnel, with respect to the student and faculty activities conducted on premises owned or occupied by the College, with respect to student and faculty housing situated on premises owned or occupied by the College, and with respect to all other activities, Mesa College shall not discriminate against any person on account of race, creed, color, natural origin, or sex.

1977

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College Calendar
1977-1978

SUMMER SESSION, 1977

June 20	Registration for First Four-Week Term and Eight-Week Term
June 21	Classes Begin
July 4	Independence Day Holiday
July 15	First Four-Week Term Ends
July 18	Registration for Second Four-Week Term
August 1	Colorado Day Holiday
August 12	Summer Session Ends

FALL QUARTER, 1977

August 15	New-Student Credentials Due
September 14, 15, 16	Evening Registration
September 15, 16	Faculty Workshop
September 17	Residual ACT Testing
September 19	Orientation and Group Meetings for New and Transfer Students
September 20	Pre-Registration Counseling
September 21	Registration
September 22	Classes Begin
September 29	Last Day to Change Schedule
October 24, 25, 26	Midterm Examinations
November 23	Thanksgiving Vacation Begins
November 28	Classes Resume
November 28-December 2	Pre-registration for Winter Quarter 1978
December 5	Finals Begin
December 9	Fall Quarter Ends

WINTER QUARTER, 1978

January 3	Residual ACT Testing
January 3	Registration
January 4	Classes Begin
January 11	Last Day to Change Schedule
February 6, 7, 8	Midterm Examinations
March 6-10	Pre-registration For Spring
March 13	Final Examinations Begin
March 17	Winter Quarter Ends

SPRING QUARTER, 1978

March 27	Residual ACT Testing
March 27	Registration
March 28	Classes Begin
April 4	Last Day to Change Schedule
April 24, 25, 26	Midterm Examinations
May 29	Memorial Day Holiday
June 5	Final Examinations Begin
June 9	Commencement

Mesa College will begin a semester calendar in August 1978.

Table of Contents

Foreword

Mesa College began providing educational services in 1925 and has offered a wide range of lower-division college programs throughout the succeeding years. In 1974 the College's services were further expanded to include eleven baccalaureate-degree majors and some interesting new procedures and learning methods.

Mesa is continuing to offer the strong comprehensive lower-division programs that have attracted students in the past. In addition, the well-established occupational programs are being improved and strengthened to provide better opportunities for job entry after a program of study ranging from a few weeks to two years. The baccalaureate-degree areas of study give patrons of Mesa College additional opportunities to prepare for a job or for further advanced study.

The new programs and procedures provide a wider range of choices for those seeking educational services; they also encourage progress toward educational goals in a minimum-time, maximum-flexibility context. In addition, challenging career-oriented opportunities result from the merging of traditional learning methods with a variety of newer kinds of learning experiences relating to work beyond the campus and to the issues, problems and needs facing our citizens today.

Mesa College exists primarily to provide environments for learning and service. College officials want these environments and services to be of the highest possible quality, to enable all individuals to recognize and develop their abilities and talents, and the citizens, generally, to be well-served.

General Information

HISTORY OF THE COLLEGE

Mesa College was organized as Grand Junction State Junior College in 1925 by authority of legislation that had been enacted on April 20 of that year. The College opened its doors on September 21 in a renovated former elementary school building at 5th and Rood, culminating a quarter-century of planning by community leaders. Another twelve years passed before the Colorado General Assembly voted state support of $100 per student in 1937. Prior to that time local individuals, organizations and students paid for the College's operation. State and county aid began in 1938 after formation of the Mesa County Junior College District under terms of the 1937 legislation, and the name of the institution was changed to Mesa College. This basic support structure continued until 1974. Under terms of Senate Bill No. 16, enacted by the Colorado General Assembly of 1972, the electorate of the junior college district voted to dissolve the district and transfer the assets of Mesa College to the Trustees of State Colleges in Colorado, effective July 1, 1974.

The legislation authorized the expansion of Mesa College's programs to include the addition of Bachelor of Arts and Bachelor of Science degrees.

Mesa College has experienced growth in both enrollment and physical plant throughout the years. The first permanent structure on the present campus, a large classroom building occupied in 1940, continues to serve an important function as an education facility. Many other fine buildings have been added during succeeding years, especially during a period of marked growth in the 1960's. Expansion of Mesa College's faculty and other resources has kept pace with the enrollment, providing the students with a favorable student-instructor ratio and access to quality learning materials and facilities.

OBJECTIVES

Mesa College is a general purpose institution which seeks (1) to provide a broad range of educational services for the individual students who utilize them and for the citizens, collectively, who reside in the College's service area, (2) to offer flexibility in its programming so that people of differing circumstances from all of the post-secondary age groups can easily take advantage of College services, and (3) to help people not only gain knowledge and skill but also experience how these tools can be used constructively for the solution of problems.

Within the above contexts Mesa College seeks to provide an appropriate variety of (1) vocational-technical programs leading directly to employment in a number of occupational areas, (2) two-year associate degree courses of study leading to either employment or more advanced study, (3) baccalaureate-degree majors leading to employment or to further study in the various professions, and (4) community services which lead to civic, cultural, ethnical, health, intellectual, moral, recreational and social improvements in communities in the College's service area.

ACCREDITATION

In 1957 Mesa College was fully accredited by the North Central Association of Colleges and Secondary Schools as a community junior college. Since March 1974 the College has been accredited at the baccalaureate level by North Central. Accreditation by this agency places credits earned at Mesa College on a par with those earned at other similarly accredited institutions throughout the United States.

BUILDINGS AND EQUIPMENT

Mesa College is developing its campus according to a master plan which is periodically updated to provide for the College's needs of the future.

Houston Hall (1940), the first permanent building on the present campus, provides classrooms for business, data processing, home economics, humanities, and social science.

Horace Wubben Hall (1962) incorporates the finest of modern science and engineering classroom and laboratory facilities for physical and natural sciences and the field of engineering. A special feature of this building is an octagonal lecture hall, seating 100,

which has provisions for audio-visual presentations and laboratory demonstrations. The fully air-conditioned building also provides staff offices, reference library, and conference rooms.

Lowell Heiny Library (1967) is a three-level building incorporating the latest concepts in library design, with a wide variety of study facilities and open stacks available for up to 80,000 volumes. The collection includes more than 63,000 volumes plus 650 periodicals. The library has facilities for a variety of learning experiences, including reading, viewing, listening, research, and group discussions. The first level of the building provides office space for administrative and student services staffs.

Mary Rait Hall (1948, remodeled 1967) includes classrooms, Audio-Visual and Duplicating departments, and other facilities on the first floor. The upper two floors provide office space for sixty faculty members.

W. W. Campbell College Center (1962) contains cafeteria, bookstore, study and recreational lounges for students and faculty, office and conference facilities for student leaders, a snack bar, and game rooms.

Child Development Center (1964) provides facilities for Mesa College's training program for directors and other personnel of child-care centers and also for the Parent Education and Preschool program.

Three 200-student residence halls (1966 and 1967) provide comfortable living quarters for boarding students. Most of the rooms are doubles, but a few singles are available. All rooms are furnished with modern wall-hung furniture.

Roe F. Saunders Physical Education Center (1968) provides facilities for a variety of physical education and recreation activities. Major features include all-purpose gymnasium, swimming and diving pools, locker and shower rooms, classrooms, and office space for the Division of Physical Education. Physical education and practice athletic fields are located immediately west of the Physical Education Center. Tennis courts are just north of the facility.

College Service Center (1968) houses all types of equipment and shops used in general campus upkeep. It also includes areas for the Purchasing Department, central receiving, supply storage, and campus mail service.

Walter Walker Fine Arts Center (1969) includes classroom and studio facilities for art, music, and drama and a multi-purpose Little Theatre.

William A. Medesy Vocational-Technical Center (1969) houses the Mesa College Area Vocational School. The building has shops and classrooms for auto mechanics, auto body and fender, welding, electronics, and audio-visual and graphic-communications departments. The school serves both youth and adults of the region as a training center for various occupations.

Shops and laboratories for various Continuing Education courses are available in the Mesa College Area Vocational School facilities and on a rental basis, as needed, from the local school district and from private owners.

LOCATION

Mesa College's campus is bordered by North Avenue, Twelfth Street, Orchard Avenue, Cannell Avenue, Mesa Avenue, and College Place, about one and one-quarter miles north and east of Grand Junction's nationally famous Downtown Shopping Park. The residential section in the vicinity of Mesa College is attractive and modern. Several stores and other conveniences are located within walking distance of the campus, and many others, including large shopping centers, are located along North Avenue.

Grand Junction's location in a scenic part of the Rocky Mountain West provides unlimited opportunity for the outdoorsman. Many Mesa College activities involve the physical advantages of the region. Among these activities is the College's physical education program in skiing, which is conducted at the Powderhorn-on-Grand Mesa Ski Area. Qualified instructors, a variety of lifts, and miles of excellent trails combine to make the ski area a valuable adjunct to the College's Winter Quarter program. Students also take advantage of the city's parks, golf courses, and swimming pools and the numerous outdoor attractions to be found in the nearby mountains.

LINCOLN PARK

Directly to the south and east of Mesa College across North Avenue is beautifully landscaped Lincoln Park, the public recreation center of Grand Junction. The park includes a green-turfed football field, quarter-mile cinder track, baseball diamond and stands, eight concrete tennis courts, and a nine-hole golf course with grass fairways and greens, all available to college students. Lincoln Park is the site of the annual National Junior College Athletic Association Baseball Tournament.

ENROLLMENT

Mesa College's regular day program enrollment for Fall Quarter 1976 was 2,649, including 1,515 freshmen, 598 sophomores, 302 juniors, 229 seniors, and 5 unclassified students. The freshman class consisted of 817 men and 698 women. The sophomore class included 352 men and 246 women. There were 193 men and 109 women in the junior class, and the senior class included 155 men and 74 women. Five women were unclassified. Of the total 2,649 students, 2,477 were Colorado residents and 172 were non-residents, including 19 from foreign countries.

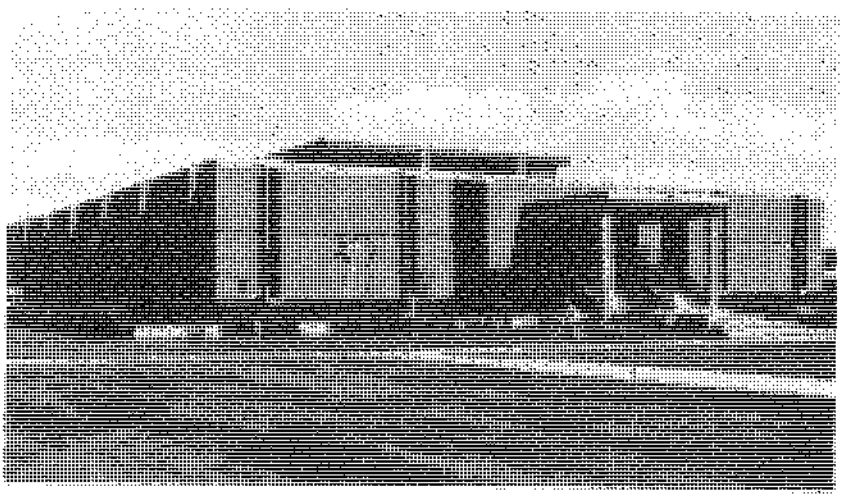
In addition, 1,396 students were enrolled in one or more classes in the College's extended day or evening program, which offers degree and special-credit courses designed to meet the needs of students in the area who cannot attend the day program.

In its role as a multipurpose institution Mesa College served a total 4,045 individuals in organized classwork during Fall Quarter 1976.

COLLEGE-COMMUNITY RELATIONS

Through mutual cooperation with the community, Mesa College has become an integral factor in the educational, cultural and social development of Colorado West. Faculty members are available for lectures and discussions on a wide range of subjects related to education, agriculture, science, the arts and humanities, careers and current social problems. Student groups appear before both public and private audiences for information or entertainment programs. The public is invited to attend many types of programs at the College — musical, dramatic, forensic, religious, athletic, and those devoted to public affairs and international relations. These may be presented by faculty, students, community members, or visiting speakers and artists.

Special programs of community-wide interest are presented in College facilities from time to time by community groups. The churches of Grand Junction cooperate with the College in meeting the needs for religious education among the students. Opportunities include participation in student classes in Sunday schools, youth organizations, and in choirs.



Instructional Programs

NOTE: As this catalog went to press, Mesa College was in the process of reorganizing its instructional divisions and departments into six different schools. The organizational change will be effective for the 1977-78 academic year and some courses listed in various sections of this catalog may be offered under an instructional unit by another name, but the usefulness of the catalog for planning purposes should not be materially impaired.

PROGRAMS OF STUDY

Mesa College has programs of three general types:

(1) Those offered by the traditional Academic Divisions;
(2) Those offered by the Occupational Studies areas; and
(3) Those offered through the Office of Continuing Education.

The **Academic Divisions** of the College and the subject areas included in each are listed below:

School of ~~Division~~ of Biological Sciences and Home Economics (agriculture, biology, botany, forestry, home economics, zoology)

Division of Business (accounting, business management, general business, secretarial)

Division of Computer Science, Mathematics and Engineering (computer science, engineering, mathematics, statistics)

Division of Fine Arts (art, drama, music)

Division of Humanities (education, English, liberal studies, literature, philosophy, reading, speech, and foreign languages)

Division of Physical Education and Recreation (physical education activity and theory, leisure-time activities, recreation leadership)

Division of Physical Sciences (chemistry, geology, astronomy, archaeology, physical science, physics)

Division of Social Sciences (anthropology, economics, geography, human services, political science, psychology, and sociology).

The **Occupational Studies** areas offer programs in graphic communications, auto body and fender, auto mechanics, data processing, dental assisting (expanded function), early childhood education, electric lineman, electronics, engineering technician, fire science technology, horticulture, job entry in business, law enforcement, medical office assistant, nursing (associate degree), nursing (practical), occupational guidance specialist, radiologic technology, secretary — legal or medical, travel and recreation management, welding, and training through Western Health Education Center.

Among the programs listed above are those included in the offerings of two formally organized Occupational Studies divisions, the Division of Health Programs (Department of Nursing) and the Division of Trade and Industrial Education.

The **Office of Continuing Education** offers numerous programs, mostly in evening classes, to meet a variety of interests and needs. These include both credit and non-credit courses with appeal to a wide range of interests and ages.

CERTIFICATES, DIPLOMAS, DEGREES

Mesa College grants one and two-year certificates in specified vocational-technical programs; the two-year (junior college) diploma; associate degrees in arts, science, commerce, and applied science; a three-year certificate in certain professional fields; and the bachelor of arts (B.A.) and bachelor of science (B.S.) degrees.

A student may first receive a certificate, diploma, or associate degree before progressing on toward the baccalaureate degree, although such is not necessary.

The program of study pursued by a student at Mesa College will depend upon career plans and educational objectives. For those who plan to work toward the baccalaureate degree, Mesa College offers majors in Animal-Plant Management, Business (Accounting or Management), Computer Science, Environmental Geoscience, Liberal Studies, Human Ser-

vices, Occupational Guidance Specialist, Leisure and Recreation Services, Selected Studies, and Visual and Performing Arts.

Some students may choose to take courses at Mesa College which will fulfill lower-division requirements for transfer to a college or university that offers baccalaureate or professional programs not currently available at Mesa College. Others may prefer to work toward the two-year diploma or one of the associate degrees, either as preparation for immediate employment upon graduation or as the first phase of their total educational objective.

In recent years Mesa College has given increased attention to a variety of Occupational Education programs for students whose immediate plans do not include completion of a baccalaureate degree. These specialized programs of a terminal, technical, or semi-professional nature are designed to help students develop the specific skills required for employment in various technical occupations.

ACCELERATION OF COLLEGE STUDY

Some students may be capable of reducing the time necessary to complete the baccalaureate degree through: enrollment in college classes while in high school; taking extra hours with permission of their adviser; attending summer session; challenging courses; earning credit through College-Level Examination Program (CLEP); or petitioning to receive college credit for work experience. Further information may be obtained from the counseling staff.

STATE COLLEGE AND UNIVERSITY CONSORTIUM

The institutions governed by the Trustees of the State College in Colorado (Adams State College, Mesa College, Metropolitan State College, University of Southern Colorado, and Western State College) are joined in a consortium. The purpose of this consortium is to identify and facilitate cooperative efforts among the institutions. It is expected that such efforts will lead to broader educational opportunities for students than can be offered by any one of the institutions alone.

Mesa College reserves the right to withdraw from its offerings any course which the enrollment does not justify giving during any particular quarter. Other courses may be added any quarter if there is sufficient demand.

In some programs, certain courses may be offered on an alternate-year basis or as determined by demand.

Student Services

COUNSELING AND GUIDANCE

Each Mesa College student is provided with opportunities for continuous guidance and counseling. This service includes academic, social, vocational and personal counseling.

The guidance program begins when freshmen and transfer students first arrive on campus. Students are assigned to faculty advisers on the basis of vocational or major-subject interest. The adviser helps the student plan a course of study and complete the registration process and then continues to provide assistance in such matters during the entire period that the student is enrolled at Mesa College, unless the student requests to be transferred to another adviser.

Counseling services are available for all students of the College. These services provide an opportunity for students to receive help in determining their abilities, aptitudes and interests. A full-time counseling service is available for students who are having difficulty in making satisfactory adjustment to college life either personally or socially. Regardless of the counseling situation, the student is assured of friendly, confidential aid.

Any student needing personal, educational, or vocational counseling is encouraged to see the Vice-President for Student Affairs, the Director of Guidance, or any member of the professional counseling staff. These services are available during regular office hours at the Student Services Center located on the terrace level of the Lowell Heiny Library Building. In addition, a counselor is on duty from 6 to 10 p.m. at Houston Hall to assist students in the day-school or the evening Continuing Education program.

Mesa College is small enough to offer students the opportunity to know instructors personally. Instructors are interested in and willing to help other students as well as their own advisees.

Parents and students are invited to visit Mesa College during the summer. At any time during office hours they will find staff members willing to help with their questions.

CAREER INFORMATION AND PLANNING CENTER

Career counseling and vocational guidance services are available at the Career Center located at 1152 Elm Avenue. The Career Center is manned by professional personnel of the Area Vocational School and the Student Services staff. These services are designed to assist either students or prospective students in the development of realistic occupational goals and career plans.

JOB DEVELOPMENT AND PLACEMENT

The Job Development and Placement Office is located in the Career Center. Each year a large number of students qualify for employment upon graduating from Mesa College or upon completion of a specific course of study in one of the College's many programs. The instructors, division directors, and counselors maintain close contact with business and industry concerning job opportunities and training needs, and a record of available positions, both full and part-time, is kept in the Job Placement Office. This office coordinates all of Mesa College's efforts, along with the cooperation of the Office of Financial Aids, in assisting students in obtaining part-time and full-time employment in occupations for which they have been prepared at the College. Students interested in full and part-time jobs should contact the Placement Office and complete an application for employment.

FINANCIAL AIDS

Financial aid at Mesa College consists of a balanced program of scholarships and grants-in-aid awarded for outstanding academic achievement or outstanding performance in special skill areas including vocational skills, athletics, drama, music, etc. Mesa College also participates in federal and state programs of grants, loans and student employment, the awarding of which is based primarily on need as determined by an accepted needs-analysis system.

COLORADO STUDENT-AID PROGRAMS (Available to full and half-time students. Half-time students will be considered for assistance only when the needs of full-time students have been satisfied.)

1. **Colorado Grants** — Grants not to exceed $1,000 and awarded to Colorado resident students on the basis of documented financial need. Financial aid packages which include Colorado Grants may not exceed the documented financial need of the student.
2. **Colorado Scholarships** — This program is an effort by the State of Colorado to recognize Colorado resident students for outstanding achievement in academic and talent areas. This award shall not exceed $300 and need is not a factor in determining recipients.
3. **Colorado Work-Study** — This program is designed to provide employment, both on and off campus, for students with documented need.
4. **State Student Incentive Grant (SSIG)** is a matching program between the State of Colorado and the federal government. Half of the grant to a student is provided by the state and half of the grant is funded by the federal government. Awards are made only to students with extreme need, and the maximum SSIG that may be awarded any student is $1,500 of which $750 is SSIG funds and $750 Colorado Grants funds.

FEDERAL STUDENT-AID PROGRAMS

1. **B.E.O.G.** — Basic Educational Opportunity Grant Program is a grant program available to needy students enrolling in an eligible institution of post-secondary education. Applications are available from high school counselors, U.S. post offices, employment offices or the office of financial aids at any accredited post-secondary institution. The student applies directly to the Basic Education Opportunity Grants analysis center and, in turn, submits a Student Eligibility Report (SER) to the financial aids officer of the college of choice for the grant determination. Full-time and part-time students enrolling in an institution of post-secondary education who are high school graduates or equivalent are eligible to apply. The BEOG Program is the base program for financial aids at Mesa College.
2. **College Base Programs** — Mesa College participates in many of the other federal student-aid programs. These include: (1) the National Direct Student Loan Program, (2) the Nursing Student Loan Program, (3) Supplemental Educational Opportunity Grants Programs, (4) the College Work-Study Program, and (5) the Law Enforcement Education Program (LEEP) for in-service law enforcement officers only.

Supplemental Educational Opportunity Grants (SEOG) are available to exceptionally needy students who wish to attend Mesa College. Under this program, students from low-income families who have exceptional financial need may receive an outright grant of from $200 to $1,500. The amount of grant is geared to the parental contribution but may not exceed one-half of the student's total financial need.

Financial need to pay for educational expenses is an essential requirement to qualify for assistance from any of these programs. Students who must have financial aid in order to secure a college education are encouraged to contact the financial aids office of the College for necessary information and application forms. Both full time and half-time students may receive consideration.

Since financial need is the primary requirement for determining eligibility for assistance under any of the federal student aid programs, Mesa College requires that the student applicant submit either the Family Financial Statement (FFS) of the American College Testing Program or the Parent's Confidential Statement (PCS) of the College Scholarship Service. These forms should be available at either the high school principal's or counselor's office, or may be obtained by writing the office of financial aids at Mesa College.

There is no absolute deadline for submitting applications for any of the federal student-aid programs; however, students who have all application materials complete and on file with the Admissions Office and Financial Aids Office by March 15, and have demonstrated financial need, will receive consideration in the first screening of applications. In addition, any application other than BEOG received after July 1, 1977, may not be considered for Fall Quarter 1977.

Guaranteed Student Loans may be obtained up to a maximum of $2,000 but not to exceed the student need for an academic year. Applications are submitted to participating banks, savings and loans associations, and credit unions. These loans are available at seven per cent interest, repayable after students complete their education. If the student is eligible for the federal interest benefits, the accruing interest, while the student is in school, is paid by the federal government. A student who does not qualify for the interest benefit, as determined by a financial-needs analysis, may secure a loan but the interest accrues and is payable by the student while the student is enrolled in post-secondary education.

MESA COLLEGE SCHOLARSHIP AND DEVELOPMENT FUND, INC.

The Mesa College Scholarship and Development Fund, Inc., is a non-profit agency comprised of prominent citizens of the area who are interested in aiding deserving students at Mesa College. This group, which functions independently of the College, conducts an annual drive to raise funds for scholarships and student loans. The organization also serves as a receiving and clearing agency for many of the established scholarships and for those received from clubs and organizations. All scholarships are designed to apply toward tuition and fees.

1. **Scholarships** — Each quarter a number of scholarships amounting to $75 per quarter are awarded to students who have achieved the minimum 3.0 grade-point average and who have not previously received a scholarship. Applications are submitted immediately following mid-term examinations. Scholarships are awarded at the completion of the quarter, and the scholarship then becomes effective for the subsequent quarter.
2. **Community Clubs and Organizations Scholarships** — In addition to the institutional scholarships described above, many scholarships and awards have been established for students of the College by individuals and organizations of the Grand Junction area. The amounts of these awards vary but all are designed to apply toward tuition and fees.
3. **Student Loans** — The College provides short-term and intermediate-term loan funds from which students may borrow to help meet financial obligations temporary in nature. By definition, short-term loans are limited to a maximum of $50, repayable within 60 days or by the end of the quarter, whichever comes first. Intermediate-term loans are repayable within six months or, in any event, not later than September 1 following the date of the loan. Loans in this category are normally limited to $300. There is 4 per cent finance charge for loans made from this fund.

PART-TIME EMPLOYMENT

The Office of Student Personnel Services operates a job placement service to assist students who work part time to help pay for their college expenses. Applications for such employment should be obtained from, and filed with, the Office of the Director of Student Financial Aids immediately following registration. Students will then be notified as steady part-time jobs become available.

STUDENT HEALTH SERVICES

Mesa College provides health services for all students. These include the part-time services of a medical doctor and the full-time services of a registered nurse. The type of services provided include first-aid treatment and prescription of drugs for common illness, dispensing of simple medicines, recommending proprietary drugs, consultation concerning health problems including referrals to physicians and dentists, conducting health surveys, calling on students reported ill who reside in campus housing, and visiting students confined in local hospitals.

In addition, the college provides an excellent student accident and sickness insurance plan. This plan is mandatory for all students, but carries a special waiver provision for those students who already are covered under family or other insurance plans. The plan protects the student twenty-four hours per day at school, at home, or while traveling during the school year, including interim vacation periods.

Students entering Mesa College for the first time, or who have had their college education at Mesa interrupted for a period of one calendar year or longer, are required to

complete a special health report form. These forms are provided by the College Admissions Office and the completed certificate of health must be submitted to that office prior to registration.

STUDENT ACTIVITIES

Mesa College believes in the development of those student-initiated activities which supplement the more formal instructional program. An extensive and varied program of extra-class activities, in which all students are eligible and encouraged to participate, is expected to provide constructive experiences which will stimulate personal growth and social development and add to the student's enjoyment of life. All student activities are coordinated through the Office of Student Activities.

The Student Body Association is governed by elected representatives organized into a legislative body known as the Student Cabinet. The Student Cabinet, operating within the framework of a formal constitution, provides a broad program of social, educational, and cultural activities for all students of the College. Students at Mesa College will find an active and growing student government structure, operating under three basic philosophic premises:

(1) There are many areas in the College where students may and should be actively involved, including those areas where decisions are made that directly affect them;

(2) The College has the responsibility to provide the educational opportunities and the counseling necessary to enable students to be effective in these roles;

(3) Students participate as respected partners in the areas where their interests are of concern.

In addition, the College provides a comprehensive program of activities including intercollegiate athletics, intramurals, drama, forensics, and numerous art and music groups in which interested students are encouraged to participate.

The Lectures and Forums Committee, in cooperation with Student Cabinet, brings several nationally-known artists and lecturers to the campus each year to provide entertainment and educational and cultural enrichment to the faculty and student body.

The College has a large number of service and special interest organizations which offer all students the opportunity to participate as members of a group or groups with common interests.

The W. W. Campbell College Center provides offices for student government and student publications, and serves as a cultural, recreational, and social activity center available to all students. In addition, the Center includes the College Cafeteria, Snack Bar, and Bookstore.

CAMPUS PARKING

Students and College staff members who wish to park on campus may purchase parking permits for designated areas. The parking sticker does not guarantee a parking space, but permits on-campus parking when such space is available.

HOUSING

Housing in the college residence halls provides a program of out-of-class education and a physical setting which contribute to the growth and total development of the student. Each residence hall has staff members who counsel, stimulate, and significantly influence the development of students. These staff members assist residents in dealing with new ideas, programs, policies and problems of college life.

Because experience has demonstrated that freshmen living in campus residence halls have a better opportunity to adjust to both academic and student life, the College believes that all freshmen who must live away from home to attend classes should live in college residence halls. Consequently, freshman men and women who are under 21 years of age and who do not reside at home are required to live in College residence halls. Exceptions to the above rule must be granted by the Director of Housing. Since there are not accommodations in College residence halls for all resident students, the College has adopted the following rules for regulating the housing of its students:

(1) To the extent that vacancies are available, all freshman resident students must live in College residence halls unless permission is granted by the Director of Housing for them to live off campus.
(2) Sophomore resident students and upper-division students (juniors and seniors) are encouraged to live in College residence halls but may live off campus if they prefer to do so.
(3) Freshmen who cannot be accommodated in the residence halls at the time of registration and who are not excused by the Vice President for Student Affairs or the Director of Housing on one of the bases given below are required to move into a residence hall the quarter immediately following the time notification by the College is given the student that space is available therein. Exceptions to the above rule must be granted by the Director of Housing.
(4) Students who live with their wives or husbands, or with their parents in Grand Junction or vicinity, shall register their housing with the Office of Admissions and Records at the time of registration of each academic year and in the event of change in address during the year.
(5) Students otherwise required to live on campus but whose health conditions demand special services and living conditions or whose relatives make available their homes at a considerable saving to the student on room and board, must secure permission from the Director of Housing to live off campus.
(6) Students who are 21 years of age are not required to live in College residence halls and do not have to secure permission of the Director of Housing to live off campus.

General Requirements. A housing deposit of $50 is required, in addition to the signed contract, before a room reservation will be made. This guarantees the holding of a room space for a period not later than 9 a.m. on the first day of classes of the quarter for which the space is reserved. Upon the student's occupancy of the room and the completion of registration, the $50 room reservation deposit becomes a security deposit held by the College Business Office. If all provisions of the contract have been complied with and no damage charges have been assessed, the $50 security deposit will be refunded within 60 days. When a reservation is cancelled 30 days prior to registration for the quarter for which accommodations have been reserved, the full $50 reservation deposit will be refunded. Otherwise, there will be no refund of the reservation deposit.

Refund on Housing and Boarding Contract. The housing and boarding contract is a contract for the full academic year payable on a quarterly basis. Normally, no student will be permitted to break the contract unless the student is getting married, has special health problems, or is terminating his enrollment at the College.

If a student withdraws from the College during a quarter, he/she will be assessed charges for room and board to cover the period of residence in the hall and will receive the $50 security deposit less damages. Refunds on meals and room rent will be made on a prorated basis through the fifth week of the quarter. After that time, only meal charges will be refunded, prorated on a weekly basis.

If the student marries during the quarter, the housing contract may be terminated if the student wishes. The student will be assessed charges for room and board to cover the period of residence in the hall. The $50 security deposit, less damages, will be refunded. Refunds of meal charges and room rent will be as prescribed above.

Off-Campus Housing. Students who cannot be accommodated in Mesa College residence halls will be granted permission to live off campus. The College has no jurisdiction over off-campus housing but attempts to assist students in locating housing by soliciting listings of accommodations that may be available in the Grand Junction area.

Expenses at Mesa College

The College reserves the right to adjust any and all charges, including fees, tuition, room and board, etc., at any time deemed necessary by the Governing Board. ***In the event the actual costs vary significantly from the estimates shown in the following paragraphs, a separate fee card will be published.***

TUITION AND FEE SCHEDULE (IN EFFECT DURING 1976-77)

For Regular Academic Year: Fall, Winter, Spring Quarters

Full-Time Students	**Per Quarter**	**Per Year**
COLORADO RESIDENTS — Enrollment for 10 to 18 hours per quarter: (Surcharge of $8 per quarter hour credit over 18 credits)		
Tuition	$123.00	$369.00
Student Services Fees	48.00	144.00
Total	*$171.00	*$513.00
NON-COLORADO RESIDENTS — Enrollment for 10 to 18 hours per quarter: (Surcharge of $33 per quarter hour credit over 18 credits)		
Tuition	$490.00	$1,470.00
Student Services Fees	48.00	144.00
Total	*$538.00	*$1,614.00
Students Enrolled for Nine Credit Hours or Less		
COLORADO RESIDENTS		
Tuition	$14.00 per credit hour	
Student Services Fees	2.00 per credit hour	
Total	$16.00 per credit hour*	
NON-COLORADO RESIDENTS		
Tuition	$33.00 per credit hour	
Student Services Fees	2.00 per credit hour	
Total	$35.00 per credit hour*	
Summer Session — 1977		
Colorado Residents	$15.00 per credit hour*	
Non-Colorado Residents	$34.00 per credit hour*	

**The above tuition and fee rates are those actually charged during the 1976-77 school year. At the time this catalog was printed, the 1977-78 tuition and fee rates had not been established. Some increase in both tuition and fees is anticipated for 1977-78.*

REFUNDS OF TUITION AND FEES

If a student withdraws within ten calendar days of the first day of classes, two-thirds of tuition and fees may be refunded. After ten days, no refunds will be made except in cases of unusual emergency.

APPLICATION AND EVALUATION FEES

Application and Evaluation Fee (non-refundable).....$10.00
Valid only for the quarter for which the student makes application.

PRIVATE AND SPECIAL INSTRUCTIONAL FEES

When private and special instructional services are required, additional charges will be incurred by the student. These fees are payable in advance to the College Business Office and vary with the nature of the instruction. Private instruction in applied music is available through the College from instructors approved by the College. Cost of this instruction is $35 per quarter for one lesson each week. Other special instructional services available to students which require extra fees include bowling, skiing, golf, etc.

MISCELLANEOUS FEES

Late registration, $10 first day, $5 each additional day, maximum	$30.00
Graduation (cap, gown, diploma)	$10.00
Late petition for graduation	$ 2.00
Late credential fee	$ 3.00
Aquatics fee (swimsuit and towel)	$ 2.00

PAYMENT OF FEES

Tuition and fees are due and payable at the time of registration, and registration is not complete until the student's obligation is met in full. Any student who enrolls and attends classes is liable for payment of fees. No student having unpaid financial obligations of any nature due the College shall be allowed to graduate or to receive a transcript of credits.

BOARD AND ROOM

Board and room in College residence halls is contracted on a yearly basis but is payable each quarter during registration. At the time this catalog was printed, the exact cost of board and room for 1977-78 had not been established. It was estimated that these costs would be as follows:

Fall Quarter	$410.00	Spring Quarter	$390.00
Winter Quarter	$390.00	**Total for Year**	**$1190.00**

The above estimated charges are for the five-day (15 meals) double room plan. This plan provides three meals per day, Monday through Friday. In addition, the College offers to all students an optional weekend plan which includes five meals (breakfast is not served on Sunday). The estimated cost of this plan is $52 per quarter.

OFF-CAMPUS HOUSING, ON-CAMPUS MEALS

For students who are permitted to reside off campus, room rental varies according to the type of accommodations and may range from $60 to $125 per month. Since meals are difficult to obtain in private homes and rooming houses and are generally more expensive at commercial eating establishments, the College Cafeteria offers a special quarterly meal plan for students who do not live in College residence halls.

Estimated cafeteria rates for 1977-78 are listed as follows:

	Five-Day Plan	Seven-Day Plan
Fall Quarter	$210	$262
Winter Quarter	$198	$250
Spring Quarter	$198	$250
Total for Year	$606	$762

REFUNDS ON BOARD AT COLLEGE CAFETERIA

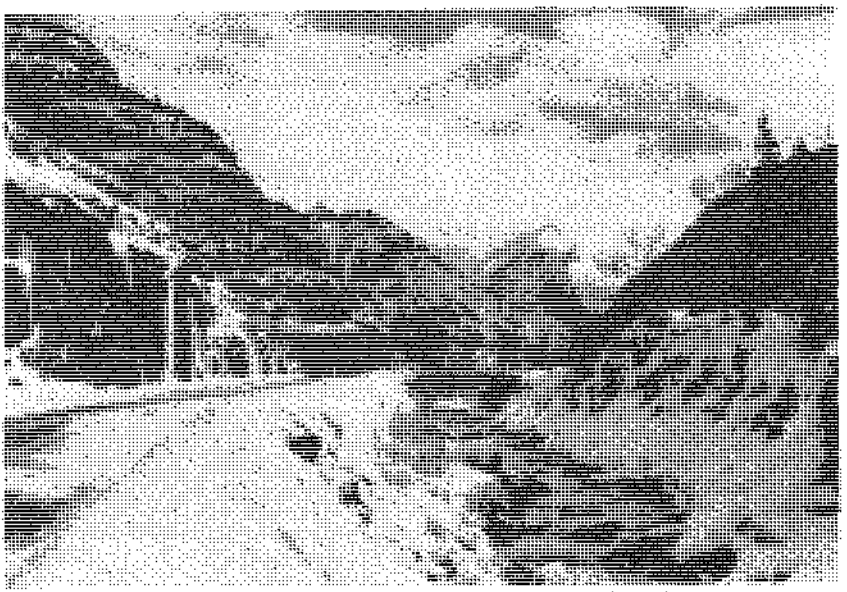
Students who are requested by College officials to withdraw from the College, or who have to withdraw because of emergency conditions, normally will be given refunds for meals prorated on the number of weeks in the quarter.

BOOKS AND SUPPLIES

Textbooks, notebooks and school supplies are sold at the College Bookstore. Cost of needed books and supplies will vary according to the course taken by the student but should not exceed $160 for the year. For some programs the cost may be substantially less. Some saving may be realized by buying used books which may be available in limited quantities. Nursing students will have additional costs of uniforms and transportation to and from hospital training centers.

DETERMINATION OF RESIDENCE STATUS FOR TUITION PURPOSES

The classification of students as residents of Colorado for tuition purposes is determined under Colorado statute. The final decision regarding tuition status rests with the institution. Questions regarding residence (tuition) status should be referred only to the Director of Admissions. Opinions of other persons are not official or binding upon the institution.



Admissions Information

ADMISSION TO MESA COLLEGE

Mesa College will admit high school graduates, non-graduates of high school who are 18 years of age or older (see **Admission of Special Students** below) and others who have sufficient experience and seriousness of purpose to enable them to benefit from Mesa College's offerings. Admission is granted without regard to race, color, creed, national origin, or sex.

Admission to Mesa College is granted upon the filing of an application for admission and the presentation of satisfactory credentials. All applications must be filed upon the official forms available at the College, or, for Colorado residents, at the office of the high school principal. A $10 evaluation fee must accompany the admission application.

Colorado high school graduates who have completed satisfactorily a minimum of fifteen acceptable units of high school work are eligible for admission to the freshman class. The application for admission, which includes a transcript of the high school record properly filled out and signed by the high school principal should be on file in the Admissions Office not later than August 15 for the Fall Quarter. As the number of approved applicants approaches the planned capacity for the Fall Quarter this deadline may be advanced to an earlier date. Applications for admission for the Winter and Spring Quarters should be on file in the Admissions Office not later than two weeks prior to the beginning of the quarter.

ADMISSION OF SPECIAL STUDENTS

Individuals who lack some of the requirements for admission as regular students may be admitted as special students on either a part-time or full-time basis. A special student may become a regular student upon fulfilling the requirements for entrance. This may be done by submitting a G.E.D. High School Equivalency Certificate or, in some cases, by substituting certain college courses for high school units.

ADVANCED PLACEMENT

Mesa College recognizes superior high school achievement by means of advanced placement for those students who have taken especially enriched or accelerated courses before entering college. Usually, applicants qualify for such placement by satisfactory achievement on College Level Examination Program placement tests (CLEP) or special placement examinations prepared by the respective academic departments or divisions of Mesa College. Detailed information concerning advanced placement may be obtained by writing the Office of Admissions and Records.

ADMISSION TO ADVANCED STANDING (TRANSFER STUDENTS)

Students honorably dismissed from other colleges or institutions may be admitted to advanced standing at Mesa College. Students applying for advanced standing will furnish to the Admissions Office a transcript of all college work (to be sent from each institution attended). An applicant for admission who has already attended another institution may not disregard a collegiate record and apply for admission as a first-time freshman.

A high school transcript is also required of all transfer students.

Transfer students with fewer than 90 quarter hours of credit are required to take the ACT prior to registration unless the test has been taken previously and an official record of the scores is on file in the Mesa College Office of Admissions and Records. Such test scores are not a regular part of the official transcript and are released by the student's former school only at the student's specific request.

It is Mesa College's general policy to accept up to 96 quarter hours of credit in transfer from accredited two-year community or junior colleges.

Transfer students (Colorado residents) who may be on probation or suspension from the institution previously attended cannot be admitted until they have been approved by the Admissions Committee. In such cases the applicant must address a written petition to this committee describing the circumstances leading up to the probation or suspension sta-

tus and any significant changes in these circumstances that would indicate that a successful record might be established at Mesa College. Out-of-state transfer applicants must be in good standing at the collegiate institution most recently attended to be eligible for admission to Mesa College.

ADMISSION OF FOREIGN STUDENTS

Foreign students will be considered for admission Fall Quarter only. In making the decision to attend Mesa College, foreign students should be aware that the College does not have a special program or courses in English and that no funds are available for financial aid covering either tuition and fees or living expenses.

To be considered for admission, foreign students must complete and submit the following to the Admissions Office at Mesa College prior to August 1: (1) Application form with $10 non-refundable application fee; (2) Medical examination report; (3) Copy of American College Testing Scores; (4) High school transcript, translated into English; (5) Transcripts from other colleges and universities attended; and (6) Certificate of financial support.

Foreign students must provide documented evidence of ability to read, write, speak and understand the English language. This requirement may be fulfilled in one of the following ways: (1) Submit scores of Test of English as a Foreign Language (TOEFL) with an average of 45 or higher; (2) Submit results of Michigan Test of English Language with minimum score of 70; (3) Complete a recognized English Language Institute with an achievement level of 108; or (4) A foreign student who has been enrolled as a regular full-time student at another college or university may be considered on an individual basis.

Before admission is granted, a foreign student must provide proof of financial ability to meet cost of tuition, fees, books, living accommodations, and incidental expenses for at least one full year. The total cost per student is approximately $5,000 per calendar year. The sum of $1,000 must be deposited with the Mesa College Business Office by August 15. This will be applied to the first quarter's expenses and will be refunded only if admission is not granted.

Further information and forms may be obtained from the Director of Admissions.

ADMISSION OF HANDICAPPED STUDENTS

Mesa College admits physically handicapped students and assists such students with class schedules, housing, parking, and health problems.

Currently, the physical barriers in the buildings and facilities on the campus are under study relative to changes needed to accommodate the handicapped student. Some of these changes have already been made, and it is hoped that adequate state funding will allow completion of this project in the near future.

Since many of the classroom buildings are not equipped with elevators, it is often difficult for the physically handicapped to schedule all classes on a readily accessible level. It is recommended that the prospective student visit the campus prior to enrollment and meet with counselors to discuss special needs and determine the feasibility of completing the program of the student's choice.

CONSORTIUM STUDENTS

The Registrar of each State College and University Consortium member institution can provide any regularly enrolled student the materials with which the student can enroll temporarily in any other member institution without incurring additional matriculation costs. The student is subject only to regular tuition and fees charged by the host institution for the particular course or courses, as determined by the student's residence status. Such enrollment is subject to space being available in the host institution. It is the responsibility of the student to secure in writing, at the home institution, prior agreement about satisfaction of requirements. Members of the consortium are Adams State College, Mesa College, Metropolitan State College, University of Southern Colorado, and Western State College.

HEALTH EXAMINATION

Completion of a health questionnaire is required of all students entering Mesa College for the first time.

Foreign students and those students entering the Associate-Degree Nursing or Licensed Practical Nursing programs, the Early Childhood Education program, or the Radiologic Technology program must submit a special health (medical) examination form completed and signed by a physician.

For all other students, the health report form consists of a simple card questionnaire which can be filled out and signed by either the student or the parent.

The appropriate completed medical examination or health form is one of the requirements of admission and must be filed with the Office of Admissions and Records prior to registration.

SPECIAL ADMISSIONS INFORMATION FOR VETERANS

Mesa College is approved for almost all of its programs by the Veterans Administration for education and training of veterans under applicable public laws. There may be a few new programs in vocational-technical areas which have not been approved for veterans' benefits. Veterans planning a course of training in special programs not described in the college catalog or identified as approved for veterans' benefits should check with appropriate college officials before enrolling in such a program if veterans' benefits are desired.

Students who plan to qualify for Veterans Administration benefits must make special arrangements through the College Admissions Office at least six weeks prior to their first registration if they plan to have veterans' benefit checks on hand for payment of expenses at the time of registration. Otherwise, veterans should come prepared to finance their tuition and fees, books, supplies, and living expenses for at least two months. This is the normal length of time required to set up a veteran's file in the regional office of the V.A. and start issuing monthly checks.

ADMISSIONS AND COUNSELING TESTS

Mesa College requires the ACT (American College Test) of all new students to be submitted to the Admissions Office prior to registering for any classes. Students are not admitted to Mesa College on the basis of "passing" or "failing" the ACT tests. The test results are used by the counseling center and by the student and adviser as the basis for planning a course of study, and as an aid in placement in certain class sections, keeping within the student's abilities and interests. Extra classroom instruction is provided on a limited basis for those whose test scores indicate weakness or deficiencies in certain areas such as English and mathematics. The results may also be used for scholarship consideration and institutional research.

There are some exceptions and exemptions to this admissions requirement. Students who are exempt from having to submit their ACT scores as part of their admissions requirement are:

1) Students enrolled only in classes offered through the Continuing Education night-school program.
2) Students who are enrolled in a certificate program of one year or less.
3) Students transferring to Mesa College from other accredited colleges or universities with 90 or more quarter hours of credit.
4) Students enrolled in day classes for nine quarter hours of credit for the first two quarters.

When a student has accumulated more than 18 hours of credit and enrolls in the regular day program in either an associate-degree or baccalaureate-degree program, the student is required to have ACT scores on file in the Office of Admissions and Records. This is mandatory whether the student is enrolled on a part-time or full-time basis.

High school students admitted to Mesa College under special consideration must submit their ACT scores as part of their admissions requirement.

It is recommended that prospective students take the ACT tests during their senior year. Transfer students (unless exempt under item 3 above) are required to have their ACT

test scores on file in the Admissions Office prior to registration. ACT scores from a previous college or university are acceptable. Any applicant who for valid reason did not take the ACT on one of the five national test dates, may take the special residual ACT test scheduled prior to registration each quarter. Contact the Director of Admissions or the Testing Office for further details. The results will be available to the student and the student's adviser during registration. A special testing fee of $12.50 will be collected from the student immediately prior to the test.

Scholastic Aptitude Test (SAT) scores are not required by Mesa College and will not excuse the student from the ACT tests. When the SAT scores are received they are filed in the student's permanent record and personnel folder where they are available for counseling purposes if desired.

COURSE-OF-STUDY REQUIREMENTS

The course of study which an individual student pursues depends upon interests, aptitudes, and future plans. Freshmen and sophomore (lower-division) requirements at Mesa College are essentially the same as at the other four-year colleges and universities in the state. Students who plan to transfer after one or more years at Mesa College should decide upon the college of transfer as early as possible. This will enable the student to take courses that will meet the lower-division requirements of the intended transfer college. Course planning is the responsibility of the student; however, counselors and faculty advisers are available to assist students as needed.

REGISTRATION

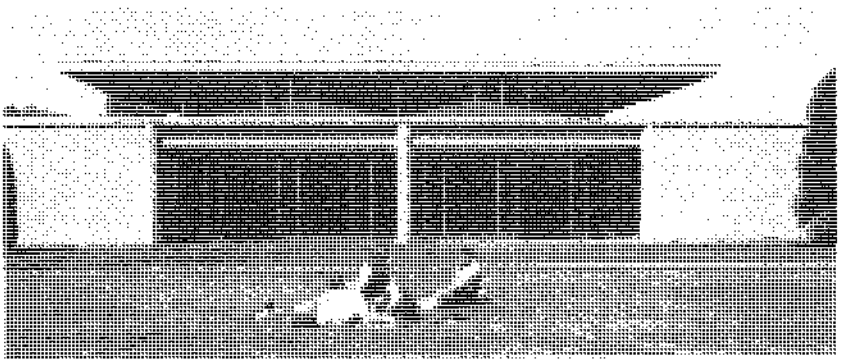
In order to become a student of the College, an applicant for admission must register on the official forms provided by the College Office of Admissions and Records during the period scheduled for registration and pay tuition and fees at the Business Office. Credit will be given only for the specific courses for which the student is registered.

NO-CREDIT-DESIRED COURSES

A student who desires to attend certain classes regularly, but does not wish to take the final examinations or receive grades or credit, should register No Credit Desired in these courses. Credit for such courses may not be established at a later date.

WITHDRAWAL FROM COLLEGE

A student who desires to withdraw from the college should notify his faculty adviser and report to the Office of Admissions and Records. The necessary withdrawal papers will be filled out and officially signed by an appropriate College official. The student will receive a grade of W (withdrawn) for each course regardless of whether passing or failing at the time of withdrawal. Such withdrawal may be made at any time during the quarter prior to the sixth day after midterm grades are posted and available to students from their faculty advisers. No student may withdraw from the College after this date, except in case of extreme emergency.



Graduation Requirements

To graduate from Mesa College with the diploma, associate degree, or baccalaureate degree, a student must:

1. Have been regularly enrolled for at least three quarters, including the quarter during which graduation requirements are met, and must have earned a minimum of 24 credit hours at Mesa College for an associate degree and 42 credit hours for a baccalaureate degree.
2. File with the Registrar an application for graduation sometime during the quarter immediately preceding the quarter during which graduation requirements are to be met. A nominal graduation fee is charged for the diploma and all degrees.
3. Satisfy all general and specific requirements of the College including the fulfillment of all financial obligations.
4. Have removed from the official record all marks of deficiency in those subjects for which the student expects to receive credit toward graduation.

Only lower-division courses will be accepted in fulfilling general-education requirements.

Students must attain a minimum cumulative grade-point average of 2.0 (C) in lower-division work before being permitted to take upper-division subjects for credit.

Students seeking a baccalaureate degree from Mesa College must earn a minimum of 40 quarter hours of upper-division credit in their major field at Mesa College or the higher minimum that may be established for a particular program.

Except for changes in major, students are required to complete the curriculum or course of study in which they initially enroll, provided courses needed to complete the program are available. In the event such courses are not offered, alternate courses approved by the division concerned may be pursued, according to the catalog current at the time of enrollment, as long as such study is not interrupted by a year or more absence from enrollment. This rule shall be followed regardless of changes in the curriculum or course of study which may occur following initial enrollment.

If a student begins or resumes study at Mesa College after having been absent from college enrollment for one academic year or more, the student must follow the curriculum or course of study outlined in the catalog current at the time of re-enrollment unless the division concerned gives written authorization for the student to pursue a different curriculum or course of study.

Mesa College reserves the right to evaluate on a course-by-course basis any credits earned 15 or more years prior to re-enrollment which the student wishes to apply toward any degree, diploma, or certificate program.

DEGREE REQUIREMENTS

To qualify for the two-year diploma, an associate degree, or the baccalaureate degree, in addition to the general graduation requirements stated above, a student must complete certain general-education requirements for the diploma and each of the specific degrees, as follows:

1. **Two-Year Diploma:**
   - Freshman English ..... 6 credit hours
   - Social Science or Literature ..... 6 credit hours
   - Physical Education (3 quarters of different activity courses) ..... 3 credit hours
   - Electives ..... 48-72 credit hours
2. **Associate in Arts Degree:**
   - Freshman English ..... 6 credit hours
   - Literature ..... 6 credit hours
   - Social Science ..... 6 credit hours
   - Physical Science or Mathematics ..... 6 credit hours
   - Biology or Psychology ..... 6 credit hours
   - Physical Education (3 quarters of different activity courses) ..... 3 credit hours
   - Approved electives ..... 15 credit hours

30

3. **Associate in Science Degree:**

Freshman English	6 credit hours
Social Science or Literature	6 credit hours
Physical Education (3 quarters of different activity courses)	3 credit hours
Laboratory Science or Mathematics	24 credit hours
Approved electives	32 credit hours

4. **Associate in Commerce Degree**
See requirements in Division of Business section.

5. **Associate in Applied Science Degree**

Freshman English	6 credit hours
Social Science (including Psychology) or Literature	6 credit hours
Physical Education (3 quarters of different activity courses)	3 credit hours

In addition to the above general-education requirements, students seeking the Associate in Applied Science Degree must enroll in one of the specially designed Occupational Education programs. The specific course requirements for these programs are listed in the Occupational Education section of this catalog.

*NOTE: The freshman English requirement of 6 credit hours in all of the above degree programs and the two year diploma may be met by completing English 111 and 112 (6 credit hours) plus either English 113 or 115 (3 credit hours) or a freshman literature class (3 credit hours).

To qualify for the two-year diploma a student must earn a minimum of a 2.0 grade-point average for 64 credit hours, including 3 hours of physical education activity courses. For any of the associate degrees, a student must earn a 2.0 grade-point average for all hours taken toward meeting the 60-hour requirement, including the 3 hours of physical education activity courses.

6. **Baccalaureate Degree Requirements**

Students who meet requirements for the baccalaureate degree must complete a minimum of 180 quarter (credit) hours, plus 3 quarters of varied physical education activity courses. Of the 180 credit hours, a minimum of 45 credit hours must be in upper-division courses. A minimum of 2.0 (C) overall grade-point average must be maintained. Repeated courses will be counted only once. Each baccalaureate-degree program must include 45 credit hours of lower-division general education courses. The 45 credit hours must include, as a minimum, the following:

English 111, 112, and 113 or 115 or a three-hour Literature course	6 credit hours
Humanities or Fine Arts	6 credit hours
Biological Sciences or Psychology	9 credit hours
Physical Sciences or Mathematics	9 credit hours
Social Sciences	9 credit hours
Elective (from any of above areas)	3 credit hours
	45 credit hours

The requirements of the major in the baccalaureate-degree programs offered by Mesa College vary from a minimum of 45 hours for some programs to a maximum of 68 hours in others. Specific information on the requirements of each of the baccalaureate-degree programs is included in the section of the catalog dealing with courses and programs under each of the academic divisions.

CERTIFICATES

Mesa College offers one and two-year certificates in several vocational-technical fields. The specific requirements for certification in these programs are found elsewhere in this catalog under Occupational Education. Three-year specialist programs are also available in several areas.

TEACHER PREPARATION

Mesa College recognizes the need for teachers and encourages students with appropriate interest and aptitude to prepare for teaching. Currently, Mesa College does not offer a baccalaureate degree in teacher training and education. The first two years of teacher training consist primarily of general-education courses, which are offered by Mesa College. Students should plan their study program at Mesa to coordinate with the requirements of the college to which they plan to transfer.

TRANSFER OF CREDIT

Accreditation by the North Central Association of Colleges and Secondary Schools assures the acceptance of credits earned at Mesa College by other accredited colleges and universities throughout the United States. Students are reminded that acceptance of transfer credit by any accredited college depends upon the individual student's previous grade average and a certification from Mesa College that the student is in "good standing."

General Academic Regulations

LATE REGISTRATION

Students who register late are expected to make up the work missed. Students who register after the first week are advised to enroll for less than a normal 15 credit hour load. Late registration must be completed within ten calendar days including the first day of registration. A special fee is charged for late registration. This information is included under "Miscellaneous Fees."

ATTENDANCE

Students at Mesa College are expected to attend all sessions of each class in which they are enrolled. Failure to do so may result in a lowered grade or exclusion from class. At any time during a quarter, a student who fails to attend regularly may be dropped from college rolls.

Absences will be excused when incurred by reason of a student's participation in required field trips, intercollegiate games and other trips arranged by the College only if previously approved by the Director of Student Services. The coach, instructor or other official whose activities require students to be absent from classes shall file with the Director of Student Services a list of the names of the students involved at least 24 hours before the activity.

Absences due to serious illness or strictly unavoidable circumstances may be excused if the instructor in charge of the course is completely satisfied as to the cause. Being excused for an absence in no way relieves the student of the responsibility of completing all the work of the course to the satisfaction of the instructor in charge.

STUDENT LOAD AND LIMITATIONS

The normal student load is 15 credit hours (18 for engineering students). The minimum load to be recognized as a full-time student is 12 credit hours. Students may register for less than 12 quarter hours, in which case they are classified as part-time students.

INDEPENDENT STUDY

Independent-study courses are offered in a number of programs in the various divisions. Credit earned through independent study is limited to 6 quarter hours toward an associate degree and 9 quarter hours toward a baccalaureate degree.

Students are not allowed to enroll for credit in a lower-division independent-study course until they have completed a minimum of 9 quarter hours of work in the field in which the independent study is planned and also have attained a cumulative grade-point average of 2.5 or higher. Students must attain a cumulative grade-point average of 2.75 or higher and complete a minimum of 12 quarter hours of work in the field in which upper-division independent study is planned before they can enroll in an upper-division independent-study course. In all cases, consent of the instructor is required.

Independent-study courses cannot be used to fulfill general-education requirements for a degree.

ACADEMIC STANDARDS

Academic Standing. The scholastic standing of a student at Mesa College is computed on the basis of all courses attempted. This includes grades of courses attempted at other accredited colleges and universities from which the student may have transferred, as well as those earned at Mesa College. Mesa College uses the four-point system in computing the grade-point average (GPA) of its students. Under this system, a student receives four quality points for each credit hour of A; three points for each credit hour of B; two points for each credit hour of C; one point for each credit hour of D; and no quality points for F's. An example follows:

	3 Credit Hours	A = 12 points
	3 Credit Hours	B = 9 points
	3 Credit Hours	C = 6 points
	3 Credit Hours	D = 3 points
	3 Credit Hours	F = 0 points
Totals	15	30

30 divided by 15 = 2.00 GPA

If a student repeats a course previously taken at Mesa College, only the second grade received is computed in determining the cumulative average. Incomplete grades are considered as tentative grades and until changed are not considered in computing either the cumulative grade-point average or the grade-point average for the particular quarter concerned. A student is not considered to be making satisfactory progress toward a degree unless the student is achieving a cumulative grade-point average of 2.00 (C), or higher. For academic purposes, students either currently or formerly enrolled are classified (1) in good standing, (2) on academic probation, or (3) suspended.

"Good Standing" signifies that the student is making satisfactory academic progress and is eligible to return or continue his studies at Mesa College.

"Academic Probation" indicates a status between good standing and suspension and constitutes a warning to the student that the student's scholastic achievement needs improvement or suspension may result.

"Academic Suspension" represents a temporary involuntary separation of the student from the College for failure to meet minimum academic standards.

ACADEMIC PROBATION AND SUSPENSION

A student is subject to academic probation for the next quarter enrolled if he/she does not achieve the cumulative grade-point average required for the following specific categories of total credit hours completed:

Credit Hours	Cumulative GPA
0-30	1.5
31-45	1.6
46-60	1.7
61-75	1.8
76-90	1.9
above 90	2.0

At the end of any quarter in which a student's cumulative grade-point average falls below the above requirement, the student will be placed on probation for the next quarter enrolled as either a part-time or full-time student. If the student, at the end of the quarter on probation, fails to bring his/her cumulative GPA up to the minimum required for his/her particular credit-hours-completed category, such student shall be subject to academic suspension.

Once a student is placed on probation, the student may not be reinstated in satisfactory academic standing based upon less than minimum full-time performance (12 quarter hours credit completed) for the quarter on probation. Part-time achievement (less than 12 quarter hours) can only either continue the student on probation for another quarter or result in suspension, depending upon whether the student's academic performance for the quarter on probation meets the minimum GPA requirement prescribed above or falls below this requirement.

After a student has completed more than sixty credit hours, probation and suspension shall be based on the 2.00 cumulative grade-point average which is the minimum required to be making satisfactory progress toward a degree. If at the end of any given quarter a student permits his/her cumulative grade-point average to fall below a 2.00 GPA, such student will be placed on academic probation for the next quarter enrolled.

If at the end of the quarter on academic probation, the student fails to earn a 2.00 or higher GPA, such student will be considered immediately subject to suspension. In the event a student placed on academic probation earns the minimum 2.00 GPA for the quarter on probation, but fails to raise his/her cumulative grade-point average up to the minimum 2.00 requirement, such student shall be continued on academic probation for an ad-

ditional quarter, or quarters, provided the student's quarter average meets the requirement of 2.00 or higher GPA. This situation of probation could continue until such time as the student either is reinstated in satisfactory academic standing by improving his/her cumulative GPA to 2.00 or above or is suspended for failure to earn a 2.00 or higher for the particular quarter on probation.

An exception to the preceding is that any student, regardless of previous academic standing, may be considered subject to suspension if his/her grade-point average falls below .75 for any quarter enrolled, as either a part-time or full-time student.

A first suspension shall be for a period of one quarter, summer quarter excluded. Subsequent suspension shall be for one calendar year.

Where extenuating circumstances exist, a suspended student may appeal to the Office of Admissions and Records for permission to be continued on probation for the next quarter.

Any student who has been suspended may not enroll as a part-time student, except during the summer quarter.

All of the above measures are to be viewed from the standpoint that academic probation and suspension are not disciplinary in nature, but rather an attempt to guide the student in the direction of the student's highest academic potential.

EVALUATION

The evaluation of student learning progress is considered to be a planned and continuous process and consists of a variety of activities including judgment, observation, testing, etc. Midterm and final examinations are a part of the evaluation process.

GRADE REPORTS

Individual grade reports are mailed to the permanent home address of every student at the end of each quarter. Special reports may be obtained at any time upon application to the Office of Admissions and Records. An official grade report is withheld, however, until all fees owed the College are paid.

SYSTEM OF GRADES

Grades at Mesa College are indicated as follows: A, excellent to superior; B, good to excellent; C, satisfactory; D, passing but not satisfactory; F, failure; I, incomplete; W, withdrawn; NC, no credit; WN, withdrawn from no-credit class; IP, in progress.

INCOMPLETES

A grade of "I" (incomplete) is given to a student only in emergency cases. Once given, the incomplete grade must be made up by the end of the next term, summer term excluded. If the incomplete grade is not made up, the "I" grade will automatically be changed to the grade which was specified by the instructor on the incomplete grade report turned in to the Records Office.

This policy does not exclude extension of the incomplete grade in exceptional circumstances. An incomplete grade **is not** to be made up by a second or subsequent enrollment for credit in the same course.

HONOR LISTS

The President's List is made up of those students who earn a straight "A" (4.00 grade-point) average while enrolled in a minimum of 13 credits for a particular quarter.

The Dean's List includes students who achieve a grade-point average of 3.5 or higher while enrolled in a minimum of 13 credits.

The lists are based on quarter grades, not cumulative grade-point averages, and are published at the end of Fall, Winter, and Spring quarters. Regardless of grade-point average, a student who receives a failing grade (F) in any course is not eligible for the Dean's List.

Course Descriptions and Suggested Curriculums

The following sections of this catalog provide suggested curriculums and descriptions of courses available in the various divisions and subject-matter areas. The suggested curriculums, designed to assist students in planning their courses, include both general and special requirements for graduation with the appropriate certificate, diploma, or degree as indicated. Orientation or introductory courses are required of students majoring in certain subject-matter areas. Faculty advisers will assist students in selecting courses in fields for which no sample curriculum is listed.

Two types of general curriculums are suggested for students who wish to work toward an associate degree but who have not selected a definite major. For students who have selected majors, suggested curriculums will be found at the beginning of some of the catalog sections devoted to the various divisions or subject-matter fields.

Courses offered at Mesa College are grouped in numerous departments or fields of study within several major divisions. The course descriptions in this catalog indicate the content of the course and the prerequisites when applicable. Courses are numbered and given titles. For example, HIST 131 is a course number and **United States History** is the corresponding course title. **FWS** and **Smr** indicate fall, winter, spring and summer quarters.

Courses numbered **1 through 99** are preparatory in nature and **not** intended for transfer or for degree requirements; in some instances, however, they may be counted as electives. Courses numbered 100-199 are designed for freshmen, 200-299 for sophomores, 300-399 for junior-level students, and 400-499 for students in their final year of baccalaureate-degree work.

In some programs, certain courses may be offered on an alternate-year basis or subject to demand.

Academic Divisions

NOTE: As this catalog went to press, Mesa College was in the process of reorganizing its instructional divisions and departments into six different schools. The organizational change will be effective for the 1977-78 academic year and some courses listed in various sections of this catalog may be offered under an instructional unit by another name, but the usefulness of the catalog for planning purposes should not be materially impaired.

Mesa College reserves the right to withdraw from its offerings any course which the enrollment does not justify giving during any particular quarter. Other courses may be added any quarter if there is sufficient demand. In some programs, certain courses may be offered on an alternate-year basis or as determined by demand.

General Curriculums

FOR ASSOCIATE DEGREES

(Broad programs available to students who have not selected a definite major in one of the specific divisions.)

GENERAL

ASSOCIATE IN ARTS

FIRST YEAR

Fall Quarter	Hrs.	*Winter Quarter*	Hrs.	*Spring Quarter*	Hrs.
English 111	3	English 112	3	English 113	3
Electives	5	Electives	5	Electives	5
Music	2	Psychology	3	Music	2
Psychology	3	Music	2	Psychology	3
Physical Education	1	Art	2	Speech	3
		Physical Education	1	Physical Education	1
	14		16		17

SECOND YEAR

Fall Quarter	Hrs.	*Winter Quarter*	Hrs.	*Spring Quarter*	Hrs.
History	3	History	3	History	3
Science	5	Science	5	Psychology	3
Elective	5	Elective	5	Science	5
Literature	3	Literature	3	Elective	2
				Literature	3
	16		16		16

LIBERAL ARTS (Transfer)

ASSOCIATE IN ARTS

FIRST YEAR

Fall Quarter	Hrs.	*Winter Quarter*	Hrs.	*Spring Quarter*	Hrs.
English 111	3	English 112	3	English 113	3
Social Science or Literature	3	Social Science or Literature	3	Social Science or Literature	3
Chemistry or Geology	5	Chemistry or Geology	5	Chemistry or Geology	5
Mathematics	3-5	Mathematics	3-5	Mathematics	3-5
Physical Education	1	Elective	1	Elective	1
		Physical Education	1	Physical Education	1
	15-17		16-18		16-18

NOTE: Students who plan two years of a foreign language may begin the language during the freshman year by postponing another first-year subject until the second year. Foreign language is an elective, not a substitute for any courses required for a diploma or associate degree.

SECOND YEAR

Fall Quarter	Hrs.	*Winter Quarter*	Hrs.	*Spring Quarter*	Hrs.
Literature	3	Literature	3	Literature	3
Psychology	3	Psychology	3	Psychology	3
Foreign Language	5	Foreign Language	5	Foreign Language	5
Social Science	3	Social Science	3	Social Science	3
Elective	3	Elective	3	Elective	2
	17		17		16

Interdisciplinary Programs

In an effort to meet the needs of students whose interests are not confined to a single academic discipline, Mesa College has instituted a program that permits a student to depart from the traditional guidelines and to design, with the approval of appropriate College staff members, a course of study that best suits the student's own goals.

Selected Studies

BACHELOR OF ARTS DEGREE

The Bachelor of Arts degree in Selected Studies may be earned through a program that permits students to concentrate on areas of study that are best suited to their own needs, background, interests, and goals. The concept makes available to the student a great degree of flexibility in planning schedules, utilizing both on-campus and off-campus resources, and engaging in educational experiences of most value to the particular student.

This interdisciplinary program is initiated and structured primarily by the individual student with the assistance and advice of designated staff members. Early consultation with faculty advisers, instructors, and appropriate college officials is of paramount importance in planning this program.

Candidates for the Bachelor of Arts degree in Selected Studies must complete the general Mesa College requirement of 183 credit (quarter) hours. In addition the following conditions must be met:

1. A minimum of twenty-five per cent of the total course work must be at the upper-division level (courses numbered 300 or 400).
2. Seventy-two quarter hours of credit must be earned *after* the student becomes a declared candidate for the Selected Studies degree.
3. Work must be planned in *one major area* of concentration and *two minor areas* of concentration. One of the minor areas may be in a vocational-technical area.
   (a) A major area of concentration must consist of at least forty-five quarter hours of credit in one discipline or in two or more closely related disciplines. Thirty-six of these hours must be earned after the student becomes a declared candidate for the Selected Studies degree and the thirty-six hours must include at least twenty-four hours of upper-division work.
   (b) A minor area of concentration must consist of at least twenty-four quarter hours of credit in a discipline or in two or more closely related disciplines.
   (c) The exact course work to be contained in either a major area of concentration or a minor area of concentration is subject to the approval of the division in which the concentration discipline is taught.

Students interested in pursuing the Selected Studies program are urged to consult with the Chairman of the Division of Social Science, Room 306, Mary Roit Hall. Proper planning and advising is of the greatest importance for successful completion of this degree. Also, a declaration of major in Selected Studies must be made with the Chairman of the Division of Social Science.

Interdisciplinary Courses

During past summer sessions Mesa College has offered an interdisciplinary course including areas of study usually provided by three different academic divisions. This course, described below, will be offered in future summers subject to continued interest.

INDI 411 SAN JUAN SYMPOSIUM **Smr 9 hrs.**

An interdisciplinary course involving the study of regional biology, geology, and history, combining classroom work on campus with field study in the San Juan Mountains of Colorado.

Division of Biological Sciences and Home Economics

The Division includes the course offerings in the areas of Agriculture, the Biological Sciences, and Home Economics.
The aims of this division are to provide for students:

1. *The basic courses in pre-professional and transfer curriculums.*
2. *Courses for non-science majors for general education.*
3. *Vocational training for those students who will terminate their education at the lower-division level.*
4. *Baccalaureate degrees in Animal-Plant Management.*

Robert R. Rice, Division Chairman

Bauerle, Chowdhry, Hurlbut, Leighton, Luebbe, Monnel, McCollister, Simms, M. M. Sullivan, Wynne, Yonker, Young

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AGRICULTURE, BIOLOGY, NATURAL RESOURCES

ASSOCIATE DEGREES AND DIPLOMA

Associate in Science degrees may be earned by completing English (9 hours); Social Science or Literature (9 hours); Physical Education Activity (3 hours); Laboratory Science or Mathematics (39 hours); approved electives (33 hours).

The laboratory science and elective courses allow Agriculture, Biology, Health, Pre-Medical and Natural Science students to select a core of courses most useful to them. Students are encouraged to consult with their advisers in the selection of appropriate courses. The greater freedom of course selection may be very desirable for the terminal student. Students are cautioned on the choice of courses if they plan to pursue the bachelor's degree in the future.

Associate in Applied Science degree or diploma will be awarded to students meeting the following requirements: English (9 hours); Social Science (9 hours); Physical Education Activity (3 hours); and electives (72 hours). Students should refer to the Occupational Education section of this catalog for programs in Health and Production Agriculture.

SUPPLEMENTAL AGRICULTURE

Students who plan to supplement their education with less than a baccalaureate degree in agriculture at Mesa College may follow a course of study of their own choosing. Such a course may lead to a Mesa College Diploma or Associate Degree.

ANIMAL-PLANT MANAGEMENT

THREE-YEAR CERTIFICATE

The three-year certificate may be earned by completing all of the core required subjects in the Animal-Plant Management Bachelor of Science program and omitting the 47 hours of electives.

BACHELOR OF SCIENCE

This degree is designed for applied and practical educational experiences in the fields of Applied Biology, Animal Resources, Professional Agriculture and Natural Resources.

Core Requirements

General Education requirement including Physical Education ..... 48 hours
Basic Core program ..... 54 hours

Attributes of Living Systems	4	Mammal Nutrition or Plant Classification	5
Principles of Animal Biology	5	Genetics	5
Principles of Plant Biology	5	Multiple Resource Management	5
Cell Biology	5	Multiple Water Use Management	4
Developmental Biology	5	Microbiology	5
Ecosystem Biology	5	AGNR Seminar	1
			54

Applied Activity Field Training ..... 15 hours
Emphasis (Student may select one of the following: Applied Biology, Natural Resource Management, Professional Agriculture, Animal Resources) ..... 25 hours
Electives ..... 47 hours

TOTAL ..... 189 hours

Courses by Year

The proposed freshman and sophomore programs for the Animal-Plant Management Bachelor of Science degree are designed to provide a basic core of knowledge for a student wishing to transfer upon receiving an Associate in Science degree at Mesa College. This curriculum will allow the student to pursue bachelor's degrees in the fields of Agriculture, Biology, Education, Forestry, Health, Medicine, Natural Resources, and their related subdivisions.

FRESHMAN YEAR
(Recommended for transfer students)

	Hours	
*Biological Sciences	14-15	(BIOL 121, 122, 231, 232 or BIOL 141, 142, 143 recommended)
English Composition	9	(ENGL 111, 112, 113 suggested)
*Inorganic Chemistry	15	(CHEM 121, 122, 123 or 131, 132, 133 recommended)
*Mathematics	11-15	(MATH 131, 132 or 138, 139, and 124 recommended)
Physical Education	2	(Choice of Physical Education activity courses)

**Biology, Chemistry and Mathematics courses listed above are designed to allow the student to proceed to a level of proficiency based upon ability and major requirement.*

SOPHOMORE YEAR
(Recommended for transfer students)

	Hours	
Biological Sciences	15	(BIOL 201, 202, 203 recommended)
Humanities	6	(SPCH 102 and ENGL 115 recommended)
Physical Education	1	
Social Science	9	
Electives	18	(Discuss your selections with your adviser)

JUNIOR AND SENIOR YEARS

	Hours	
Emphasis Courses	25	(Student will select courses from one of the following: Applied Biology, Natural Resource Management, Professional Agriculture, Animal Resources)
Externship	15	(Applied, practical training in emphasis area)
Electives	44	(Select courses to give breadth and depth to your field)

EMPHASIS-AREA COURSE OPTIONS

The emphasis-area requirement may be met by selecting 25 hours from the courses listed in one of the following categories:

Applied Biology — Animal Hygiene, 4; Ornithology, 4; Animal Parasitology, 4; Vertebrate Biology, 5; Invertebrate Biology, 5; Organic Chemistry, 10; Bio-Chemistry, 5; Statistics, 5; Human Anatomy and Physiology, 9; Histology, 4; Environmental Insects, 4; Animal Facility Management, 3; Survival, 2; Comparative Vertebrate Anatomy and Physiology, 5; Mammalogy, 5; AGNR Seminar, 1; General Physiology, 5. Total 80 hours.

Natural Resource Management — Forestry Occupations, 1; Plant Classification, 5; Regional Natural Science, 3; Conservation of the Environment, 3; Weed Control, 4; Plant Propagation, 4; Organic Chemistry, 10; Statistics, 5; Environmental Insects, 4; Greenhouse Management, 4; Seminar and Research Planning, 3; Ornithology, 4; Animal Parasitology, 4; Survival, 2; Vertebrate Biology, 5; Invertebrate Biology, 5; Comparative Vertebrate

Anatomy and Physiology, 5; Geology, 5; Soils, 5; Mammalogy, 5; AGNR Seminar, 1. Total 87 hours.

Professional Agriculture — Plant Classification, 5; Crop Production, 6; Animal Hygiene, 4; Plant Propagation, 4; Animal Breeding, 4; Animal Facility Management, 3; Business Law Survey, 3; Environmental Insects, 4; Fruit Production, 5; Vertebrate Biology, 5; Invertebrate Biology, 5; Animal Parasitology, 4; Weed Control, 4; Accounting, 3; Agricultural Economics, 3; Greenhouse Management, 4; Farm and Ranch Management, 4; Taxonomy of Grasses, 3; Ag Marketing, 3; Beef Production, 3; Soil Fertility and Fertilizer, 4; Soils, 5; Environmental Horticulture, 5; AGNR Seminar, 1; General Physiology, 5. Total 99 hours.

Animal Resources — Crop Production, 6; Vertebrate Biology, 5; Invertebrate Biology, 5; Organic Chemistry, 10; Bio-Chemistry, 5; Human Relations in Business, 3; Animal Facility Management, 3; Animal Parasitology, 4; Resource Planning, 2; Weed Control, 4; Environmental Insects, 4; Penned Animal Hygiene and Management, 4; Histology, 4; AGNR Seminar, 1; General Physiology, 5. Total 65 hours.

HOME ECONOMICS (Transfer)

ASSOCIATE IN SCIENCE

The broad goal of Home Economics is to help the individual to function more effectively in society as a member of the family.

The specific objective for the transfer program is to help the student meet the lower-division requirements for transfer to a four-year institution offering a degree not available at Mesa College.

FIRST YEAR

Fall Quarter	*Hrs.*
English Composition	3
General Chemistry	5
Intro. to Home Economics	2
Basic Clothing Construction	3
Physical Education	1
Home Management	3
	17

Winter Quarter	*Hrs.*
English Composition	3
Intermediate Clothing Construction	3
General Chemistry	5
Physical Education	1
Costume Selection	2
Introduction to Child Care	3
	17

Spring Quarter	*Hrs.*
English Composition	3
Textiles	5
Home Furnishing and House Planning	5
Two-Dimensional Forms	3
Physical Education	1
	17

SECOND YEAR

Fall Quarter	*Hrs.*
Food Selection and Preparation	3
General Psychology	3
Human Anatomy and Physiology	5
Social Sci. or Literature	3
Speech Making	3
	17

Winter Quarter	*Hrs.*
Food Selection and Preparation	3
General Psychology	3
Human Anatomy and Physiology	5
Nutrition	3
Electives	3
	17

Spring Quarter	*Hrs.*
Preparation and Service of Meals	3
General Microbiology	5
Tailoring	3
Child Development	3
Electives	3
	17

HOMEMAKING (Terminal)

MESA COLLEGE DIPLOMA

This program is designed for students who plan to be in college for one or two years. The instruction focuses on the responsibilities and behavior patterns of the homemaker. The program allows the students to elect courses which they feel will meet their needs.

FIRST YEAR

Fall Quarter	*Hrs.*
English Composition	3
Home Management	3
Intro. to Home Economics	2
Physical Education	1
Basic Clothing Construction	3
Electives	3
Physical Education	1
	16

Winter Quarter	*Hrs.*
English Composition	3
Nutrition	3
Intermediate Clothing Construction	3
Costume Selection	2
Two-Dimensional Form	3
Physical Education	1
Electives	3
	18

Spring Quarter	*Hrs.*
English Composition	3
Tailoring	3
Textiles	5
Physical Education	1
Electives	3
	15

SECOND YEAR

Fall Quarter	*Hrs.*
Food Selection and Preparation	3
General Psychology	3
Social Science or Literature	3
Intro. to Child Care	3
Elective	3
	15

Winter Quarter	*Hrs.*
Home Furnishing and House Planning	5
Food Selection and Preparation	3
Social Science or Literature	3
Speech Making	3
Electives	3
	17

Spring Quarter	*Hrs.*
Preparation and Service of Meals	3
Social Science or Literature	3
Marriage and the Family	3
Child Development	3
Electives	5
	17

Agriculture-Natural Resources

Students enrolling for the study of agriculture at Mesa College should at the very outset decide whether they wish to take a course leading toward Agricultural Science, Applied Agriculture, or a terminal program.

Quarter and year designation of the courses listed below may vary.

AGNR 101 AGRICULTURAL PROFESSION **F 1 hr.**
Required of all freshmen who will major in agriculture. A survey of the various fields of study. Guidance in choosing major and minor fields of study. The opportunities as well as responsibilities associated with positions in agriculture when operating one's own business as well as when employed in one of the professions.

AGNR 110 FORESTRY OCCUPATIONS **F 1 hr.**
An orientation program designed to acquaint the student with the varied forestry professions and job characteristics. Required of all pre-forestry students.

AGNR 111 CONSERVATION OF THE ENVIRONMENT **FW 3 hrs.**
A survey of natural resources including forests, range, minerals, water, and wildlife. National, state and local policies and programs for the use of such resources. This course is open to all students. Three lectures per week.

AGNR 112 FARM POWER **FW 3 hrs.**
A theory and demonstration course on internal combustion engines, electrical systems, and power transfer. Special attention is given to proper operation, care, and adjustment of motors, engines, and transportation equipment of the farm. Two lecture periods and one two-hour laboratory per week.

AGNR 113 INTRODUCTORY ANIMAL SCIENCE **F 5 hrs.**
A study designed to furnish a general knowledge of the important principles of the livestock industry as it pertains to agriculture. Selections and evaluation of beef cattle, dairy cattle, sheep, and swine on a purebred and market basis are carried out. Emphasis is placed on types, breeds, markets, and market classification. Four lectures and one laboratory period per week.

AGNR 121 LIVESTOCK SHOWMANSHIP — BEEF **W 2 hrs.**
AGNR 122 LIVESTOCK SHOWMANSHIP — HORSES **W 2 hrs.**
AGNR 123 LIVESTOCK SHOWMANSHIP — DAIRY **W 2 hrs.**
AGNR 124 LIVESTOCK SHOWMANSHIP — SWINE **W 2 hrs.**
AGNR 125 LIVESTOCK SHOWMANSHIP — SHEEP **W 2 hrs.**
Includes basics and fine points of grooming and showmanship for showing livestock of all types at fairs, stockshows, and other events.

AGNR 133 BEGINNING RODEO **S 1 hr.**

AGNR 142 ECONOMIC ORGANIZATION OF AGRICULTURE **W 3 hrs.**
Agriculture's role in our changing economy; modern technology and its implications for farm and non-farm people; structure of agricultural industry and farm business; government and agriculture; analysis of the operating farm economy.

AGNR 201 ENVIRONMENTAL HORTICULTURE **F 5 hrs.**
Principles of horticulture science as applied to the propagation and culture of horticulture crops, language design, and improvement of plants. Prerequisite: five hours of plant science or consent of instructor.

AGNR 202 SOILS **S 5 hrs.**
A study of the formation, properties, and management of soils. Special attention is given to soil conditions that affect crop yields. Four hours lecture and three hours laboratory per week. Prerequisite: CHEM 121 or CHEM 131 for Agriculture students; waived for Forestry.

AGNR 203 ARTIFICIAL INSEMINATION F 1 hr.
Principles and procedures for collecting and processing semen from farm animals. Planning and conducting successful artificial breeding programs.

AGNR 205 FARM AND RANCH MANAGEMENT W 4 hrs.
Economics as it applies to the management of a farm or ranch, emphasizing the keeping and interpreting of simple but adequate records for the management unit.

AGNR 211 INTRODUCTION TO RANGE SCIENCE F 3 hrs.
A study of the production and preservation of hays or silage as the principle forage crops and cultivated grasses. Special attention is given to the production and maintenance of farm pastures, and management practices applied in utilizing, improving, and maintaining our range lands.

AGNR 212 GENERAL DAIRY HUSBANDRY W 3 hrs.
A general course in dairying. History and present status of the dairy industry; starting dairy herds; breeds of dairy cattle; cow testing associations; club work; study of herd records; calf feeding; general principles of feeding, management and housing of dairy cattle. Prerequisite: AGNR 113. Open to sophomore students. Two class periods and one laboratory period per week.

AGNR 213 CROP PRODUCTION S 6 hrs.
A study of the principles of field crop production with emphasis on cultural practices and botanical characteristics of crops grown in the inter-mountain region. Four hours lecture and two two-hour laboratories per week. Prerequisite: Five hours of plant science or consent of instructor.

AGNR 221 RANGE AND PASTURE FIELD LABORATORY F 2 hrs.
Taking range inventories; determining stocking rates using domestic animals and wildlife; planning reseeding and other improvements of range and pasture resources. Students perform the activities on range sites and pastures.

AGNR 222 LIVESTOCK JUDGING AND SELECTION F 2 hrs.
A study of animal form and its relation to the function of the individual. Emphasis is placed on the evaluation of live animals in terms of their probable value for producing the product for which they are intended. Market and breeding classes of livestock will be judged. Prerequisite: AGNR 113. One lecture and one laboratory period per week.

AGNR 233 ADVANCED RODEO S 1 hr.

AGNR 252 MAMMAL NUTRITION W 5 hrs.
Nutrient sources and requirements of mammals, including both wildlife and domestic animals. Emphasis is placed on metabolism and utilization of nutrients.

AGNR 254 LIVESTOCK FEEDING W 3 hrs.
Practical application of the analysis of feeds and requirements of various classes of livestock used in the formulation of balanced rations.

AGNR 301 MULTIPLE RESOURCE MANAGEMENT F 5 hrs.
A broad study of natural resources and their proper management, dealing with the various mineral and biological resources, land use, and personal resources, and how they interact together with our environment today.

AGNR 302 RESOURCE PLANNING S 3 hrs.
Fundamental concepts, problems and practices concerning the use of natural resources in the United States and particularly Colorado.

AGNR 303 AGRICULTURE MARKETING S 3 hrs.
A study of agricultural markets and the various techniques which can be used in marketing agriculture products. Also includes a general insight into the commodity futures market and its use in agriculture.

AGNR 312 PRINCIPLES OF GENETICS W 5 hrs.
A study of variation; breeding and evolution, emphasizing the physical basis of heredity, independent inheritance and linkage, as related to human, plant and animal inheritance. Four hours lecture, one hour laboratory.

AGNR 321 FRUIT PRODUCTION S 5 hrs.
Principles and practices utilized in the production, harvesting and marketing of tree and small fruits. Site selection, harvesting methods, marketing procedures and the cultural practices of planting, pollination, pruning, thinning, soil management, fertilizing and irrigation. Prerequisite: Five hours of plant science, AGNR 201, or consent of instructor.

AGNR 322 GREENHOUSE MANAGEMENT AND LAB W or S 4 hrs.
Use of enclosed structures for manipulation of environment, effects on growth as applied to floricultural crops, methods of controls, production and marketing costs.

AGNR 323 PLANT PROPAGATION F or W 4 hrs.
Improvement of crops by hybridization and selection. Special breeding methods and techniques applicable to naturally self-pollinated, cross-pollinated, and asexually reproduced plants. Includes field training and lab.

AGNR 325 FIELD TRAINING IN EMPHASIS AREA Arr. 3 hrs.
Allows a student to pursue specialized work experience in agriculture, natural resources, and biology. The student should expect to work from six to nine hours per week in earning this credit.

AGNR 331 COMPARATIVE VERTEBRATE ANATOMY AND PHYSIOLOGY F 5 hrs.
An exploration and comparison of the structure and function of the vertebrates. The lab will be based on dissections of selected animals while the lecture will address itself to the explanation of function. Prerequisite: One course in Animal Biology.

AGNR 332 WEED CONTROL F or S 4 hrs.
Weed control through predators, parasites, pathogens, attractants, irradiation, chemosterilants, and integrated control.

AGNR 333 ANIMAL BREEDING F or W 4 hrs.
Performance evaluation and prediction of genetic improvement in purebred and commercial livestock. Correlating conformation with performance. Breed, state, and national improvement programs. Includes field training and lab.

AGNR 334 ANIMAL HYGIENE S 4 hrs.
Principles of animal sanitation in relation to disease prevention and control.

AGNR 341 HISTOLOGY F or W 4 hrs.
Microscopic study of tissues and organs. Prerequisite: BIOL 111 and 112, or consent of the instructor.

AGNR 342 ANIMAL FACILITY MANAGEMENT W or S 3 hrs.
Business principles, management practices, economic factors involved in managing animal facilities.

AGNR 343 ENVIRONMENTAL INSECTS S 5 hrs.
An introductory course in the elementary anatomy and physiology of insects. A study of the life histories and habits of the more important insect pests and recommendations for their control. Four lectures and one laboratory period per week.

AGNR 345 BEEF PRODUCTION W 3 hrs.
Production of purebred, commercial, and slaughter cattle. Range, farm, and feedlot principles. Breeds, breeding, market grades, feeding and management.

AGNR 351 TAXONOMY OF GRASSES F 3 hrs.
A study of the grass family, its relationships and identification. Emphasis will be placed on the floristic composition, distribution of grass communities and field identification in the forest and range related environments. One-hour lecture; two two-hour laboratories.

AGNR 362 GENERAL PHYSIOLOGY W 5 hrs.
A study of the functions of the circulatory, nervous, respiratory, digestive, urinary, reproductive and endocrine systems of the human body. Four lectures, one three-hour lab each week. Prerequisite: Nine hours in biology.

AGNR 401 MULTIPLE WATER USE MANAGEMENT AND LAB F 4 hrs.
The study of systems for optimum beneficial use and management of water resources. Technical, aesthetic, and social aspects of water quality control.

AGNR 402 WATERSHED MANAGEMENT W 3 hrs.
Elements of wildland phydrology and influence of forest and range vegetation on environment and water resources. Introduction to upstream management for water yield, timing and quality.

AGNR 403 SOIL FERTILITY AND FERTILIZER W 4 hrs.
Principles of soil fertility and practices in fertilizer use. Management of soils to achieve optimum production.

AGNR 411 ORNITHOLOGY AND LAB S 4 hrs.
The classification and life histories of birds, including identification in the field.

AGNR 412 MAMMALOGY AND LAB W 5 hrs.
The classification, life histories, and ecology of mammals together with practice in the preparation of skins for study.

AGNR 421, 422, 423, 424, 425 EXTERNSHIP IN PROFESSION 3, 6, 10, 12, and 15 hrs.
Restricted to students who plan to earn a B.S. degree in Animal-Plant Management. The student must make arrangements with the instructor and an employer for the equivalent of one term of work experience in an area appropriate to the course background and career interest of the student.

AGNR 432 PENNED ANIMAL HYGIENE AND MANAGEMENT S 4 hrs.
A course designed to acquaint the student with laws and regulations concerning containment of animals for laboratory purposes and animal shelters. Also dietary needs, space requirements, structures, drain construction, water supplies, ventilation, disease prevention and handling procedures.

AGNR 433 ANIMAL PARASITOLOGY AND LAB S 4 hrs.
The study of the most common and important parasites of domestic animals and man: ecology, epidemiology, diagnosis, and control.

AGNR 451, 452, 453 SEMINAR IN AGRICULTURE-NATURAL RESOURCES FWS 1 hr.
Acquaints the student with current problems, topics, and research procedures in biological science, agriculture, and medicine. Topics of the seminar announced each quarter. Prerequisite: Sophomore classification and consent of the instructor.

Biology

All of the junior (300-level) and senior (400-level) biology courses are listed with the AGNR prefix. Please refer to Agriculture-Natural Resources course descriptions. Quarter and year designation of the following courses may vary.

BIOL 101, 102, 103 GENERAL BIOLOGY FWS 3 hrs.
A study of the fundamental biological principles involving both plant and animal life; survey of all of the phyla of the animal kingdom and the divisions fo the plant kingdom; the place of man in the world of living things; and the relationships of man to other organisms. Students who elect this course may not receive full credit for general college botany or zoology. Two lectures, one laboratory each week.

BIOL 111, 112 HUMAN ANATOMY AND PHYSIOLOGY F 5 hrs., W 4 hrs.
A study of the structure and function of the human body. The anatomy and physiology of the integument, skeletal, muscular, nervous, senses, circulatory, respiratory, excretory, digestive, endocrine, and reproductive systems are studied during the two quarters. Three lectures and two laboratories each week in the fall quarter, and three lectures and one laboratory per week in the winter quarter.

BIOL 121, 122 GENERAL BOTANY FW 5 hrs.
The structure and functions of the higher plants, including a study of roots, stems, leaves, flowers, and seeds during fall quarter. Study of plant forms including the algae, fungi, mosses, ferns, gymnosperms, and angiosperms during the winter quarter. Three lectures and two laboratories per week.

BIOL 126 OUTDOOR SURVIVAL S 3 hrs.
Includes three hours of lecture one evening each week; four required weekend field trips, one of which is overnight in a snow cave; various aspects of CBR warfare survival, wilderness survival, survival in city situations, first aid, mountaineering, and camping. Students learn to identify more than 50 poisonous and edible Colorado plants and are required to eat various plants, animals, and insects. Course requires the use of some personal camping equipment.

BIOL 141 ATTRIBUTES OF LIVING SYSTEMS F 4 hrs.
An introductory course in biology which emphasizes the levels of organization, stability and change in living systems. Three lectures and one laboratory per week.

BIOL 142 PRINCIPLES OF ANIMAL BIOLOGY W or S 5 hrs.
A course designed to give the student broad morphological, physiological, and ecological features and the relationships of the principal phyla of animals. Prerequisite: BIOL 141 or consent of instructor. Three lectures and two laboratories per week.

BIOL 143 PRINCIPLES OF PLANT BIOLOGY W or S 5 hrs.
The student is exposed to the diversity of relationships of plants and their structure and functional characteristics. Prerequisite: BIOL 141 or consent of instructor. Three lectures and two laboratories per week.

BIOL 148 INDIVIDUAL PROBLEMS IN BIOLOGY FWS 1 hr.
A course to allow a student to pursue individual study in some area of biology. Prerequisite: Approval by instructor and biology background in the area of study.

BIOL 149 INDIVIDUAL PROBLEMS IN BIOLOGY FWS 2 hrs.
See BIOL 148 for course description.

BIOL 201 ECOSYSTEM BIOLOGY F 5 hrs.
An ecology course designed to provide an elementary understanding in heredity by utilizing the biology of populations of organisms, as shown by principles and essential facts of population genetics, energetics, dynamics distribution and sociology.

BIOL 202 CELLULAR BIOLOGY **W or S 5 hrs.**
The cell, its components, and their functions; physiochemical properties of living systems, organelles, and their bioenergetics, macro-molecular synthesis and code transcription. Four hours lecture, one hour laboratory.

BIOL 203 DEVELOPMENTAL BIOLOGY **W or S 5 hrs.**
Developmental aspects of growth and differentiation stressed in relation to gene action, biochemical regulation, and environment. Three hours lecture, two laboratory.

BIOL 213 GENERAL MICROBIOLOGY **S 5 hrs.**
An introductory course consisting of lectures and laboratory work in identification, cultivation, and isolation of molds, yeasts and bacteria. Emphasis upon non-pathogenic forms. Prerequisite: 9 hours of biological science.

BIOL 223 PLANT CLASSIFICATION **S 5 hrs.**
This is a study of the classification and identification of the flowering plants. Emphasis is placed on plant family characteristics and the use of keys for identification. Four laboratories and one lecture each week with the use of mounted specimens and many field trips. Prerequisite: BIOL 122 or consent of the instructor.

BIOL 231 INVERTEBRATE ZOOLOGY **W 5 hrs.**
Classification, anatomy, physiology, and natural history of common invertebrate animals. Three lectures and two labs each week.

BIOL 232 VERTEBRATE ZOOLOGY **S 5 hrs.**
Classification, anatomy, physiology, and natural history of selected vertebrates. Also includes such topics as systematics, distribution, dormancy, population movements, population dynamics, territory and so forth. Three lectures and two labs each week.

Home Economics

Quarter and year designation of the following courses may vary.

HEC 101 ORIENTATION
(Introduction to Home Economics) **F 2 hrs.**
For Home Economics majors to explore opportunities in all fields of Home Economics. Some emphasis is placed on the use of time and study habits which will help the student to get the most from college.

HEC 110 BASIC CLOTHING CONSTRUCTION **FS 3 hrs.**
Basic clothing construction processes applied to the individual. Two hours lecture, four hours laboratory.

HEC 111 COSTUME SELECTION **W 2 hrs.**
The relationship of the principles of design to the planning and selection of clothing. Two hours lecture.

HEC 115 TEXTILES **S 5 hrs.**
Study of textile fabrics and fibers with emphasis on selection, care and wearing qualities of clothing. Three hours lecture, four hours laboratory.

HEC 117 INTERMEDIATE CLOTHING CONSTRUCTION **WS 3 hrs.**
Construction processes are studied and developed through the making of garments to meet individual needs.

HEC 133 HOME MANAGEMENT **FW 3 hrs.**
Study of family-living problems with emphasis on management of all resources. Three hours lecture.

HEC 134 INTRODUCTION TO CHILD CARE **FW 3 hrs.**
A lecture course pertaining to pre-natal growth; care of mother and baby; behavior patterns of the pre-school-age child as shown in physical, emotional, and social growth.

HEC 136 HOME FURNISHING AND HOUSE PLANNING **S 5 hrs.**
A study of the decoration and furnishing of a home. Artistic appreciation and buying techniques for household furnishings are emphasized. Lecture; four hours; laboratory: one hour (optional).

HEC 141 INTRODUCTION TO NUTRITION **F 3 hrs.**
A study of the functions of foods and their relation to health, with emphasis on nutrition for children. Designed primarily for students enrolled in the Early Childhood Education program.

HEC 142 INTRODUCTION TO FOODS **W 3 hrs.**
For those students who are not Home Economics majors. Emphasis placed on the principles of food preparation.

HEC 143 CHILDREN'S MEALS **S 3 hrs.**
A course designed to provide students in the Early Childhood Education program with the needed training in meal preparation. Prerequisites: HEC 141 and 142.

HEC 160 BACHELOR'S SURVIVAL **S 3 hrs.**
A course designed for men who want help in selecting and caring for clothes, planning and preparing simple nutritious meals, using money wisely, and knowing basic social grace.

HEC 212 NUTRITION **FWS Smr 3 hrs.**
The study of the functions of foods and their relation to health. Emphasis is placed on the application of nutrition knowledge to the selection of food.

HEC 213 INFANT AND CHILD NUTRITION **Smr 3 hrs.**
Nutritional aspects during pregnancy, lactation, infancy, childhood and adolescence are emphasized. Prerequisite: HEC 212.

HEC 238 CHILD DEVELOPMENT **WS 3 hrs.**
Essentials of child psychology. Study of the growth and development of young children, with emphasis on understanding and guidance. Motor skills, intelligence, emotional patterns and social behavior examined and related to the child's place in our society. Prerequisite: HEC 134 or consent of instructor.

HEC 239 RECENT TRENDS IN CHILD DEVELOPMENT **S 2 hrs.**
Discussions from current research findings concerning the emotional, social, physical and intellectual development of children.

HEC 251, 252 FOOD SELECTION AND PREPARATION **FW 3 hrs.**
For Home Economic majors. Principles and techniques of preparing all classes of foods. College chemistry is prerequisite to this course.

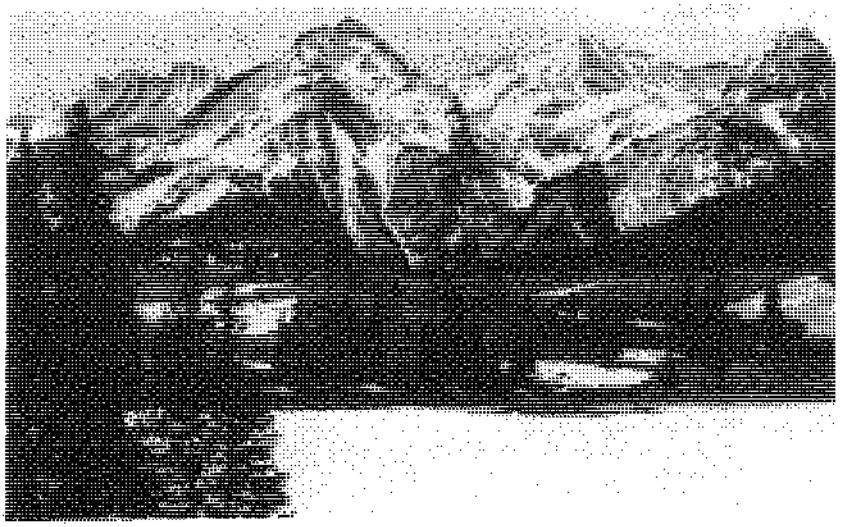
HEC 253 PREPARATION AND SERVICE OF MEALS **S 3 hrs.**
Planning, preparing and serving family meals.

HEC 261 TAILORING **FS 3 hrs.**
Planning and construction of a tailored garment such as a suit or coat. Prerquisite: HEC 110 and 117 or consent of instructor.

HEC 264 BASIC DRESS DESIGN **W 3 hrs.**
Knowledge of basic dress designs contributes to a better understanding of pattern alteration and garment fitting. The pattern work consists of changing the basic commercial pattern to create new designs.

Interdisciplinary Study

INDI 411 SAN JUAN SYMPOSIUM **Smr 9 hrs.**
An interdisciplinary course involving the study of regional biology, geology and history, combining classroom study on campus with field study in the San Juan Mountains of Colorado.



Division of Business

The purpose of the Division of Business is to provide students with specialized training for a future of self-reliance and economic opportunity. Courses in this division are designed to develop skills and understanding of business principles necessary to enter the business field as a vocation; to help students in their personal economic planning, in buying for consumption, and in safeguarding and protecting their interests as consumers; to enable students to gain a better understanding of the agencies, functions, methods, and organization of business enterprises; to develop an understanding of business ethics and provide an opportunity for practical application; and to provide background courses for students planning to enter advanced business study.

James C. Carstens, Division Chairman

Anderson, Breyley, Buckley, Capps, T. Carmichael, Carrigan, Dickson, M. Harper, Isaacson, E. Johnson, Morgan, Maurey, Myers, Owensby, Rogers, Schesser, G. Youngquist, R. Youngquist

PROGRAMS

Several types of programs are offered by the Division of Business. The Bachelor of Science programs in Accounting and Management are designed for persons desiring to enter the profession or to continue in graduate school. Associate-Degree programs are designed for persons desiring to obtain employment immediately after completion of the course of study or for transfer to another institution. One-year Certificate programs are designed for students desiring immediate employment after completion of the program. One- and two-year programs provide the necessary preparation for beginning employment as data processing workers; bookkeepers; assistant accountants; general, medical, or legal secretaries or stenographers; typists; filing clerks; business machine operators; and other types of business and office workers.

Certificates and Degrees

Students in the Division of Business may choose from programs leading to the following certificates or degrees:

One-year Certificate Programs:
- *Accounting
- *Data Processing
- *Job-Entry Training in Business
- *Legal Secretary
- *Medical Office Assistant
- *Office Clerical-Secretarial

Two-Year Degree Programs:
- *Associate in Applied Science — Data Processing
- *Associate in Applied Science — Legal Secretary
- *Associate in Applied Science — Medical Secretary
- *Associate in Applied Science — Travel, Recreation and Hospitality Management
- Associate in Arts in Business Administration
- Associate in Commerce in Accounting
- Associate in Commerce in Office Administration (Secretarial)

Four-Year Degree Programs:
- Bachelor of Science in Accounting
- Bachelor of Science in Management

*See Occupational Education section of catalog.

ONE- AND TWO-YEAR PROGRAMS

Accounting and Secretarial

The Division of Business offers one- and two-year programs in both accounting and secretarial science. The basic purpose of these programs is to afford students an opportunity to receive training which will in a relatively short time fit them for employment.

In the two-year accounting program general education is incorporated with two years of accounting and related subjects. The one-year curriculum offers only one year of accounting and related subjects.

The two-year secretarial program incorporates general education with the skills of shorthand, typing, and secretarial practices.

The nine-month office-clerical program concentrates on the rapid development of skills to enable the student to seek employment in the shortest possible time.

Both the two-year accounting and two-year secretarial programs lead to the Associate in Commerce degree or the Mesa College Diploma.

BUSINESS OCCUPATIONAL PROGRAMS

See the Occupational Education (Vocational-Technical) section of this catalog for descriptions of One-year Accounting; Automated Data Processing; Job-Entry Training; One-year Legal Secretary; Medical Office Assistant; Office Clerical-Secretarial; Secretary — Legal or Medical; and Travel, Recreation and Hospitality Management.

ASSOCIATE IN ARTS IN BUSINESS ADMINISTRATION

The Associate in Arts in Business Administration degree is offered by the Division of Business to provide the prospective transfer student with a broad liberal arts program while at the same time fulfilling basic business-degree requirements. See minimum graduation requirements and Associate in Arts degree requirements in Graduation Requirements section. These 48 hours are combined with the recommendations of the Division of Business which follow:

Business Data Processing (Introduction)	3 hrs.
Introduction to Business	3 hrs.
Business Communications	3 hrs.
Principles of Accounting	10 hrs.
*English	9 hrs.
*Literature	9 hrs.
*Social Science (Except SOCS 101, 102, 103)	9 hrs.
*Biology or Psychology	9 hrs.
*Mathematics or Physical Science (Except Archaeology and Museology)	9 hrs.
Physical Education	3 hrs.
Electives	26-27 hrs.
TOTAL	93-94 hrs.

**Specific General Education requirements*

ASSOCIATE IN COMMERCE DEGREE

The Associate in Commerce degree is granted to two groups of graduating students: (1) those who follow the accounting option and (2) those whose interests are in the secretarial field. Each group must meet the 21-hour minimum requirement for graduation as stated in the Graduation Requirements section of this catalog and in addition complete the following special course requirements: (Any deviation from this program must be approved by the student's adviser and the registrar).

	Secretarial	*Accounting*
Literature or Social Science (Except SOCS 101, 102, 103)	18 hrs.	18 hrs.
Business Mathematics or Mathematical Foundations of Business	4-5 hrs	4-5 hrs.
Introduction to Business	3 hrs.	3 hrs.
Accounting	3-5 hrs.	20 hrs.
Business Data Processing	3 hrs.	3 hrs.
Business Electives	14 hrs.	14 hrs.
Other Electives	20 hrs.	20-22 hrs.
English	9 hrs.	9 hrs.
Intermediate Typewriting	3 hrs.	
Beginning Dictation	4 hrs.	
Transcription Machines	3 hrs.	
Secretarial Practice	3 hrs.	
Business Communications	3 hrs.	
Physical Education	3 hrs.	3 hrs.
TOTAL	93-96 hrs.	94-97 hrs.

ACCOUNTING

ASSOCIATE IN COMMERCE

Suggested Course Sequence

FIRST YEAR

Fall Quarter	Hrs.
English Composition	3
*Business Math or Mathematical Foundations of Business	4-5
Math or Elective	3
Physical Education	1
*Business Data Processing	3
	14-15

Winter Quarter	Hrs.
English Composition	3
Math or Elective	5
Physical Education	1
Speech	3
*Principles of Accounting	5
	17

Spring Quarter	Hrs.
English Composition	3
*Principles of Accounting	5
Math, Statistics or Elective	3-5
Physical Education	1
*Introduction to Business	3
	15-17

SECOND YEAR

Fall Quarter	Hrs.
*Intermediate Accounting I	5
Principles of Economics	3
Business Law I	3
Social Science or Literature	3
Elective	3
	17

Winter Quarter	Hrs.
Principles of Economics	3
Business Law II	3
Social Science or Literature	3
*Intermediate Accounting II	5
Elective	3
	17

Spring Quarter	Hrs.
Principles of Economics	3
Business Law III	3
Social Science or Literature	3
Cost Accounting	5
	14

**Required core courses.*

BUSINESS ADMINISTRATION

ASSOCIATE IN ARTS

Suggested Course Sequence

FIRST YEAR

Fall Quarter	Hrs.
English Composition	3
College Algebra I	3
*Introduction to Business	3
Physical Education	1
Electives	5
	15

Winter Quarter	Hrs.
English Composition	3
Physical Education	1
*Principles of Accounting	5
Mathematical Foundations of Business	5
*Business Communications	3
	17

Spring Quarter	Hrs.
English Composition, Report Writing or Lit.	3
*Principles of Accounting	5
Speech Making	3
Statistical Applications of Business	5
	16

SECOND YEAR

Fall Quarter	Hrs.
Electives	5
Biology or Psychology	3
Literature	3
Principles of Economics	3
*Business Data Processing	3
	17

Winter Quarter	Hrs.
Electives	6
Biology or Psychology	3
Literature	3
Principles of Economics	3
	15

Spring Quarter	Hrs.
Biology or Psychology	3
Literature	3
Principles of Economics	3
Physical Education	1
Electives	6
	16

**Required core courses.*

OFFICE ADMINISTRATION — SECRETARIAL

ASSOCIATE IN COMMERCE

Suggested Course Sequence

FIRST YEAR

Fall Quarter	Hrs.	Winter Quarter	Hrs.	Spring Quarter	Hrs.
English Composition	3	English Composition	3	English Composition	3
Shorthand Theory I	4	Shorthand Theory II	4	Social Science or Literature	3
Social Science or Literature	3	Social Science or Literature	3	*Beginning Dictation	4
*Business Mathematics or Math Foundations	4-5	†Introduction to Business	3	Secretarial Accounting or Principles	3-5
Physical Education	1	Physical Education	1	Physical Education	1
	15-16	*Intermediate Typing	3		14-16
			17		

† SECOND YEAR

Fall Quarter	Hrs.	Winter Quarter	Hrs.	Spring Quarter	Hrs.
Social Science or Literature	3	Social Science or Literature	3	Social Science or Literature	3
*Business Communications	3	**Advanced Typing	3	*Secretarial Practice	3
**Business Law I	3	**Intermediate Dictation and Transcription	4	Speech	3
**Filing	2	**Electronic Word Processing	3	**Principles of Management	3
Elective	3	*Business Data Processing	3	Elective	3
*Transcription Machines	3				
	17		16		15

*Required core courses.
**Suggested Business Electives.
† Secretarial Co-op Program available during second year.

Bachelor of Science Programs

ACCOUNTING AND MANAGEMENT

The Bachelor of Science degree is granted to two groups of graduating students: (1) those who follow the Accounting program and (2) those who select the Management option.

In order to receive the Bachelor of Science in Accounting, a student must satisfactorily complete the following:

General Education and Physical Education	48 hrs.
Accounting	51 hrs.
Minor area (Data Processing or Management required)	24 hrs.
*Core Courses (not including General Education courses)	23 hrs.
Approved Electives	38 hrs.
TOTAL	184 hrs.

(It is recommended that students complete both minors in Data Processing and Management. With proper selection of courses, a third minor could be acquired).

In order to receive the Bachelor of Science in Management, a student must satisfactorily complete the following:

Business Law	9 hrs.
General Education and Physical Education (Nine hours of Economics required)	48 hrs.
Management	60 hrs.
Accounting	13 hrs.
*Core Courses	25 hrs.
Approved Electives	4 hrs.
Minor	24 hrs.
TOTAL	183 hrs.

(It is recommended that a student complete a minor in Data Processing, Accounting, or Economics. With proper selection of courses, a student could complete the requirements for more than one minor).

ACCOUNTING

Suggested Course Sequence

FIRST YEAR

Fall Quarter	*Hrs.*
*Introduction to Business	3
English Composition	3
Mathematical Foundations of Business	5
Principles of Management	3
Physical Education	1
	15

Winter Quarter	*Hrs.*
English Composition	3
*Business Data Processing	3
Speech	3
Physical Education	1
+ Principles of Accounting	5
	15

Spring Quarter	*Hrs.*
+ Principles of Accounting	5
English Composition	3
Elective	3
Physical Education	1
Human Relations in Business	3
	15

SECOND YEAR

Fall Quarter	*Hrs.*
General Psychology	3
+ Intermediate Accounting I	5
Principles of Economics	3
Elective	3
Small Business Management	3
	17

Winter Quarter	*Hrs.*
General Psychology	3
+ Intermediate Accounting II	5
Principles of Economics	3
+ Cost Accounting	5
	16

Spring Quarter	*Hrs.*
General Psychology	3
Principles of Economics	3
Statistical Applications of Business	5
Advanced Cost Accounting	3
	14

THIRD YEAR

Fall Quarter	*Hrs.*
+ Advanced Accounting I	3
+ Statement Analysis	3
*Business Law I	3
Humanities Elective	3
General Education Elective	3
Keypunch	1
	16

Winter Quarter	*Hrs.*
+ Advanced Accounting II	3
*Business Law II	3
Governmental Accounting	3
*COBOL I	5
	14

Spring Quarter	*Hrs.*
*Business Law III	3
+ Advanced Accounting III	3
Systems	5
COBOL II	5
	16

FOURTH YEAR

Fall Quarter	*Hrs.*
Auditing	5
*Quantitative Decision Making	3
Assembler Language	5
Management Elective	3
	16

Winter Quarter	*Hrs.*
Income Tax Accounting	5
Computers in Management	4
Electives	6
	15

Spring Quarter	*Hrs.*
Advanced Tax Accounting	3
Financial Management	3
Business Policies and Management	3
Management Electives	6
	15

*Core Courses
+ Required Accounting Courses

BUSINESS MANAGEMENT

Suggested Course Sequence

FIRST YEAR

Fall Quarter	*Hrs.*
*Introduction to Business	3
+ Principles of Management	3
English Composition	3
*Business Data Processing	3
Elective	3
	15

Winter Quarter	*Hrs.*
*Salesmanship	3
English Composition	3
Physical Education	1
Advertising	3
Elective	3
+ Internal Business Organizational Structure	3
	16

Spring Quarter	*Hrs.*
English Composition	3
Elective	3
Physical Education	1
Principles of Accounting I	5
+ Forms of Business Organization	3
	15

SECOND YEAR

Fall Quarter	*Hrs.*
+ Small Business Management	3
General Psychology	3
Business Law I	3
Principles of Economics I	3
Principles of Accounting II	5
	17

Winter Quarter	*Hrs.*
General Psychology	3
Principles of Economics II	3
*Income Tax — Business	3
Physical Education	1
Business Law II	3
+ Principles of Marketing	3
	16

Spring Quarter	*Hrs.*
Principles of Economics III	3
+ Human Relations in Business	3
General Psychology	3
Business Law III	3
*Mathematical Foundations of Business	5
	17

(Sequence continued on next page)

THIRD YEAR

Fall Quarter	*Hrs.*
Problems in Small Business Operation	3
Management and Labor Relations	3
+ Business and Finance	3
Managerial Accounting	3
+ Preparing for Job Placement	3
	15

Winter Quarter	*Hrs.*
Retail Management	3
*Statistical Applications in Business	5
+ Corporate Finance	3
Electives	3
	14

Spring Quarter	*Hrs.*
Advanced Marketing	3
*Insurance	3
Financial Management	3
Elective	3
General Education Elective	3
	15

FOURTH YEAR

Fall Quarter	*Hrs.*
Management Internship or courses approved by adviser	15
	15

Winter Quarter	*Hrs.*
Business Management Seminar	3
Electives	8
+ Credit and Collections	3
	14

Spring Quarter	*Hrs.*
Advanced Problems in Small Business Operation I	6
General Education Elective	5
Electives	3
+ Business Policies and Management	3
	17

**Core Courses*
+ Required Management Courses

Accounting

NOTE: Accounting majors minoring in management may count any two of the following Economics courses as Management courses: ECON 301, 310, 401, or 410.

BUAC 51 ACCOUNTING WORKSHOP **3 hrs.**
An opportunity for students to improve their understanding and skills in first-year concepts and principles of accounting. Individual weaknesses are identified and emphasis is placed on correcting them through practice and application of theory. Offered subject to demand (sufficient enrollment) as night or summer course. Does not count toward degree credit.

BUAC 101 PRINCIPLES OF ACCOUNTING **FWS Smr 5 hrs.**
Suitable for all business and accounting majors. Includes fundamental principles of double-entry bookkeeping, the balance sheet, profit and loss statement, controlling accounts, partnership accounting, corporation accounting, bonds, and introduction to management accounting.

BUAC 201 PRINCIPLES OF ACCOUNTING **FWS Smr 5 hrs.**
Continuation of BUAC 101. Prerequisite: BUAC 101, first quarter of Principles of Accounting.

BUAC 205 TEN-KEY OPERATIONS **FWS 1 hr.**
Designed to develop skills essential to accountants in the operation of the ten-key adding machine. Emphasis is placed on both speed and accuracy. Available only to majors and minors in accounting. Prerequisite: BUAC 101.

BUAC 211 MANAGERIAL ACCOUNTING **F 3 hrs.**
Application of accounting information for making managerial decisions. Includes analysis and interpretation of financial statements, budgeting for planning and control, cost behavior (cost-volume-profit relationships), relevant cost analysis for making long-and short-range capital expenditure decisions, and the impact of income taxes on management planning. (Not open to accounting majors). Prerequisite: BUAC 201.

BUAC 221 INTERMEDIATE ACCOUNTING I **F 5 hrs.**
Designed to help develop a deeper understanding of accounting theory for non-accounting and accounting majors. Provides foundation necessary for specialized accounting courses. Prerequisite: BUAC 201.

BUAC 222 INTERMEDIATE ACCOUNTING II **W 5 hrs.**
Continuation of Intermediate Accounting I. Prerequisite: BUAC 221.

BUAC 231 COST ACCOUNTING **W 5 hrs.**
Introduction to determination of manufacturing cost. Emphasis involves three elements of cost—material, labor and overhead. Job cost system, process cost system, and standard cost system are major topics. Miscellaneous cost factors are introduced at appropriate times. Prerequisite: BUAC 221.

BUAC 241 INCOME TAX **W 5 hrs.**
This course covers the Federal Income Tax Law and filing requirements for individual taxpayers, estates and trusts. Prerequisite: BUAC 222 or consent of instructor. For accounting majors only.

BUAC 261, 262, 263 INDEPENDENT STUDY IN ACCOUNTING **FWS Smr 1-3 hrs.**
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed nine credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.5 or higher will be allowed to enroll for credit in this course. Consent of instructor required in all cases.

BUAC 264, 265, 266 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
Working in a business and a position approved by the Division of Business, the student receives practical experience and an opportunity to apply academic knowledge in a work situation. The student is responsible for securing the position and arranging work hours. Written papers are required as part of the course work. A minimum of three hours per week is required for one hour of credit, six hours for two credits, and nine hours for three credits. Prerequisite: Background courses in area of job responsibilities and permission of the instructor. Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take the course. A maximum of three credit hours may apply toward an associate degree and six credit hours toward a baccalaureate-degree program. A maximum of eighteen hours of work experience, co-op programs, internships, or advanced-problems classes may be used toward the specific requirements of a baccalaureate degree.

BUAC 301 ADVANCED ACCOUNTING I **F 3 hrs.**
Accounting principles relating to partnerships, home-office and branch accounting, parent and subsidiary accounting, consolidated statements, mergers, bankruptcies, receiverships, estates and trusts. Prerequisite: BUAC 222.

BUAC 302 ADVANCED ACCOUNTING II **W 3 hrs.**
Continuation of studies from Advanced Accounting I. Prerequisite: BUAC 301.

BUAC 303 ADVANCED ACCOUNTING III **S 3 hrs.**
Continuation of studies from Advanced Accounting I and II. Prerequisite: BUAC 302.

BUAC 311 STATEMENT ANALYSIS **F 3 hrs.**
Accounting theory as it relates to financial statements. Prerequisite: BUAC 222.

BUAC 331 ADVANCED COST ACCOUNTING **S 3 hrs.**
Continued study of cost accounting with emphasis on standard costs, analysis of cost for profit decision-making purposes, and other special cost and analysis problems. Prerequisite: BUAC 231.

BUAC 351 GOVERNMENTAL ACCOUNTING **W 3 hrs.**
Accounting procedures related to governmental units and non-profit institutions. Prerequisite: BUAC 222.

BUAC 361, 362, 363 INDEPENDENT STUDY IN ACCOUNTING **FWS Smr 1-3 hrs.**
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed 12 credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.75 or higher will be allowed to enroll for credit in this upper-division course. Consent of instructor required in all cases.

BUAC 411 AUDITING **F 5 hrs.**
Study of scope and purpose of work of public accountant, professional ethics, legal responsibilities, internal control, fraud, audit working papers, original record examination, completing the audit report, and consulting services. Prerequisite: BUAC 222, 231 and STAT 214.

BUAC 441 ADVANCED INCOME TAX **S 3 hrs.**
This course covers the Federal Income Tax Law and filing requirements for corporations, partnerships, and various other areas of taxation. Prerequisite: BUAC 241.

BUAC 464, 465, 466 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
See BUAC 264, 265, 266 for course description.

BUAC 461 INTERNSHIP IN ACCOUNTING **Arr. Arranged hrs.**
Supervised work experience in business and industry. Prerequisite: Junior standing and consent of department head.

Data Processing

(Also see Occupational Education section of catalog for programs.)

BUDP 101 BUSINESS DATA PROCESSING **FWS 3 hrs.**
An introduction to the fundamentals of automated business data processing systems, including unit record and computer equipment, their use and potential as viewed from the employee and management level. Provides opportunity to investigate this rapidly growing area.

BUDP 110 BASIC PROGRAMMING KEYPUNCH **FWS 1 hr.**
An introductory five-week course in the basic operations and applications of the keypunch with special emphasis on keypunching computer-programming languages. Not recommended for data processing majors or those seeking keypunch job-entry skills. (Meets four days a week.)

BUDP 111 KEYPUNCH AND VERIFIER **FWS 2 hrs.**
A preliminary course in the fundamentals of the keypunch and verifier to develop the necessary operational skills for job entry. Includes IBM Sorter operation. Recommended for data processing majors and those interested in job-entry skills. Prerequisite: Typing or consent of the instructor.

BUDP 121 PRINCIPLES OF PUNCH-CARD EQUIPMENT **5 hrs.**
Operation and application of automatic data processing equipment. Students use the latest IBM equipment in gaining ability to solve business problems at electronic speeds. Systems and procedures involved in data processing are emphasized. Offered as a night class only, on a demand basis.

BUDP 131 COBOL PROGRAMMING I **W 5 hrs.**
Students write programs using COBOL. Emphasis is placed on traditional business applications such as payroll, accounts receivable and inventory control. Students learn to debug and document their programs. Prerequisite: BUDP 101 or consent of instructor.

BUDP 132 COBOL PROGRAMMING II **S 5 hrs.**
A continuation of BUDP 131, COBOL Programming I. Magnetic tape processing techniques; disk processing, including sequential, index sequential, and random processing; subroutines; overlays; and binary search techniques. Prerequisite: BUDP 131.

BUDP 211 PRODUCTION KEYPUNCH **S Smr 2 hrs.**
An advanced course in the operation of the keypunch, verifier, and sorter. Speed and efficiency are developed through application of business problems and community business experience. Includes methods of using companion equipment. Offered only upon sufficient enrollment. Prerequisite: Typing or consent of instructor.

BUDP 221 COMPUTER OPERATIONS **W 3 hrs.**
Students learn to compile programs written by computer programmers, use computer in business applications, and solve problems evolving from operation of the equipment. Prerequisite: BUDP 101 or consent of instructor. (Night course.)

BUDP 231 ASSEMBLER LANGUAGE **F 5 hrs.**
A beginning course in IBM-360 assembler language programming. Includes data representation concepts, instruction formats, core dump analysis, basic assembler language instructions, and register usage. Students write programs in IBM-360 Assembler. Prerequisite: At least one programming course.

BUDP 233 FORTRAN IV **FW 5 hrs.**
This is an introductory course in FORTRAN programming. Emphasis is placed on development of programming logic, flow-charting, input and output routines. Prerequisite: BUDP 101 or consent of instructor.

BUDP 234 RPG PROGRAMMING **W 5 hrs.**
A beginning course that includes computer logic flow-charting and programming fundamentals and provides an opportunity to progress in RPG through application of reports and financial statements. Operating procedures for 360 systems explained. Prerequisite: BUDP 101 or consent of instructor.

BUDP 241 COMPUTERS IN MANAGEMENT **W 4 hrs.**
Explores effective use of computer systems in the management function, including computer-data base information helpful in management decision-making. Also includes audit and control features. Prerequisite: BUDP 101. May also count as a Management course.

BUDP 261, 262, 263 INDEPENDENT STUDY IN DATA PROCESSING **FWS 1-3 hrs.**
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed nine credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.5 or higher will be allowed to enroll for credit in this course. Consent of instructor required in all cases.

BUDP 264, 265, 266 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
See BUAC 264, 265, 266 for course descriptions.

BUDP 290 AUTOMATED SYSTEMS **S 5 hrs.**
Working together as a systems team, students analyze actual business applications and convert them to an automated system. The new system is designed and flowcharted by students and the programs written in COBOL. Emphasizes the methods of system documentation which will permit adequate disclosure. Prerequisite: BUDP 131 or consent of instructor.

General Business

BUGB 101 INTRODUCTION TO BUSINESS **FWS 3 hrs.**
How the American business system operates and its place and role in the economy. American business system survey with emphasis on business functions and inter-relations between the businessman and his environment. Required of freshman business and accounting students.

BUGB 111 WORD STUDY (BUSINESS) **F 2 hrs.**
Spelling, meaning, derivation, and pronunciation with emphasis on spelling and business terms. Open to all students.

BUGB 115 FILING **FWS 2 hrs.**
Rules in alphabetic, numeric, geographic, and subject filing are studied and applied through practice in filing and locating filed correspondence. An individualized course.

BUGB 135 SALESMANSHIP **FW 3 hrs.**
The nature of selling; basic sales techniques; principles and practices. Improving the salesperson's personal effectiveness through the art of persuasion.

BUGB 141 BUSINESS MATHEMATICS **FWS Smr 4 hrs.**
Begins with a fundamental review of whole numbers, decimals, and fractions; also includes bank reconciliations, mathematics of buying and selling merchandise, interest computations on notes and savings, consumer credit and installment buying, mortgages, and depreciation computations. Electronic calculators are used in solving problems.

BUGB 211 BUSINESS COMMUNICATIONS **FWS 3 hrs.**
Essentials of English in business communication. Creative, logical, and critical thinking applied to the criticism, preparation, and planning of business letters and written and oral reports. Attention is given to application letters, the employment interview and listening skills. Prerequisites: First quarter English Composition and a knowledge of typing.

BUGB 221 INSURANCE **S 3 hrs.**
Common types of protection afforded by insurance including fire, life, automobile, accident, and health.

BUGB 240 INCOME TAX **WS 3 hrs.**
This course covers the following areas of personal income tax: filling out the personal income tax return; selecting the proper tax rates; personal exemptions and dependents; determining what income is taxable to the individual; sick pay; deductions; rentals; depreciation; pensions and annuities; retirement income; sales and exchanges of real and personal property; and capital gains and losses. Not for accounting majors.

BUGB 241 PERSONAL FINANCE **S 3 hrs.**
Managing personal finances and dealing with everyday financial problems that beset consumers, such as credit, saving, investing, and buying wisely.

BUGB 251 BUSINESS LAW I **F 3 hrs.**
Covers contracts—the formation, requirements, interpretation, discharge, and enforcement thereof; principal and agent—the relationship between agents (those authorized to enter into agreements binding others), principals (those who engage agents to enter into contracts for them), and other contracting parties (those who enter into agreements through and with the agent of another); and employer-employee relationships.

BUGB 252 BUSINESS LAW II **W 3 hrs.**
Analyzes sales (Article II of the Uniform Commercial Code, including risk, property rights, and warranties); commercial paper (common substitute for money as used in business, including notes, drafts, and checks); secured transactions (security devices and insurance). Prerequisite: BUGB 251.

BUGB 253 BUSINESS LAW III **S 3 hrs.**
Corporations (an examination of their formation, structure, and powers); partnerships (the legal effect of agreements between persons doing business together); real property (problems of ownership, transfer of title, tenant-landlord relations, and trusts and estates). Prerequisite: BUGB 251.

BUGB 261, 262, 263 INDEPENDENT STUDY IN BUSINESS **FWS Smr 1-3 hrs.**
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed nine credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.5 or higher will be allowed to enroll for credit in this course. Consent of instructor required in all cases.

BUGB 264, 265, 266 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
See BUAC 264, 265, 266 for course description.

BUGB 361, 362, 363 INDEPENDENT STUDY IN BUSINESS **FWS Smr 1-3 hrs.**
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed 12 credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.75 or higher will be allowed to enroll for credit in this upper-division course. Consent of instructor required in all cases.

Management

NOTE: 1. ECON 301, 310, 401 and 410 may be chosen for Management course credits by Management majors not minoring in Economics.
2. Management majors may take BUDP 241 for Management course credits if they are not minoring in Data Processing.
3. A student may take BUMA 451 and BUMA 401 or 402, but only 18 hours of such credit may be applied to the 60-hour Management requirement.

BUMA 101 PRINCIPLES OF MANAGEMENT **FWS 3 hrs.**
Fundamentals of organization and administration. Planning, organizing, directing, and controlling business activity. Required of all Management majors.

BUMA 102 INTERNAL BUSINESS ORGANIZATIONAL STRUCTURE **W 3 hrs.**
Essential elements necessary to any business' internal organizational structure from the point of view of both management theory and practice. Prerequisite: BUMA 101 or consent of instructor. Required of all Management majors.

BUMA 103 FORMS OF BUSINESS ORGANIZATIONS **S 3 hrs.**
A study of the principal types of business structures: their evolution, use, advantages, and disadvantages. Cases of actual business organizations are included. Prerequisite: BUMA 102 or consent of instructor. Required of all Management majors.

BUMA 121 HUMAN RELATIONS IN BUSINESS **WS 3 hrs.**
Exploring the human side of organizations. Motivation, human needs, leadership development, organizational environment and forces which have an impact on business organizations. The changing nature of work and employment. Limited to freshmen and sophomores.

BUMA 131 ADVERTISING **W 3 hrs.**
Dynamics of modern advertising, its practices, principles, media, and methods. The role and responsibilities of advertising in a changing business world.

BUMA 132 RETAIL ADVERTISING **S 3 hrs.**
Basics of retail advertising programs are identified and developed. Major areas include: preparing the store for advertising; physical application of both print and broadcast advertisements; merchandising and timing of advertising; budgeting and sales goals with respect to advertising; development of basic campaigns and advertising principles at the retail store level. Prerequisite: BUGB 131 or consent of instructor.

BUMA 201 SMALL BUSINESS MANAGEMENT **F 3 hrs.**
Aspects of management uniquely important to small business firms and the economic and social environment in which the small concerns function. Prerequisite: BUMA 101. Required of all Management majors.

BUMA 231 PRINCIPLES OF MARKETING **W 3 hrs.**
Functions, methods, institutions, channels, pricing, and the study of marketing concepts as an interrelated system of activities. Required of all Management majors.

BUMA 264, 265, 266 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
See BUAC 264, 265, 266 for course description.

BUMA 301 PROBLEMS IN SMALL BUSINESS OPERATIONS **F 3 hrs.**
Analysis of managerial problems of the small business. Case studies, outside speakers, and individual reports of local small business enterprises supplement class discussions. Student must have an understanding of elementary accounting, finance, and business law, or have experience in small business operation. Prerequisite: BUMA 201, 231, BUAC 211 or 231.

BUMA 311 MANAGEMENT AND LABOR RELATIONS **F 3 hrs.**
Rights of individual workers, their relationship to employers and unions, the right to act in concert, strikes, picketing, boycotts, and collective bargaining. Prerequisite: Principles of Economics. (This course may also be classified as an economics course—ECON 301).

BUMA 325 RETAIL MANAGEMENT **W 3 hrs.**
Basic principles and techniques of retail merchandising and store operation. Prerequisite: BUMA 231.

BUMA 332 ADVANCED MARKETING S 3 hrs.
An in-depth study of complex marketing problems beyond the scope of Principles of Marketing. Prerequisite: BUMA 231.

BUMA 339 BUSINESS FINANCE F 3 hrs.
Primary emphasis on ratio analysis, profit planning, forecasting, budgeting, working capital management, and capital budgeting. Prerequisite: BUAC 211 or 231. Required of all Management majors.

BUMA 340 CORPORATION FINANCE W 3 hrs.
Primary emphasis on investment decisions under uncertainty; sources and forms of long-term financing; financial structure and cost of capital. Prerequisite: BUMA 339. Required of all Management majors.

BUMA 341 FINANCIAL MANAGEMENT S 3 hrs.
Case studies in financial management involving concepts, practices, and techniques introduced in BUMA 339 and 340. Prerequisite: BUMA 339 and 340.

BUMA 349 BUSINESS TAXATION AND MANAGEMENT W 3 hrs.
Familiarizes the student with various business taxes such as corporate income tax, FICA, sales tax, unemployment taxes, and others. Introduces student to the concepts of tax management. Prerequisites: BUAC 201 and BUGB 240.

BUMA 351 PREPARING FOR JOB PLACEMENT F 3 hrs.
A study of the principles and techniques involved in a successful job search. Emphasis placed on conducting career research, identification of goals, elements of a job interview, and preparing a successful job campaign. Student prepares a job kit consisting of a resume, cover letter, advertisements, prospect letter, sales and follow-up letters, and prospect lists.

BUMA 361, 362, 363 INDEPENDENT STUDY IN BUSINESS MANAGEMENT Arr 1-3 hrs.
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed 12 credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.75 or higher will be allowed to enroll for credit in this upper-division course. Consent of instructor required in all cases.

BUMA 371 PERSONNEL MANAGEMENT F 3 hrs.
A study of the principles and techniques of personnel administration. Emphasis is placed on the procurement, development, utilization and maintenance of a work force. Techniques of staffing, employee relations, training and development are covered. Prerequisite: BUMA 103.

BUMA 401 ADVANCED PROBLEMS IN SMALL BUSINESS OPERATIONS I FWS 6 hrs.
Planning, organizing, and operating small business firms; small business as a dynamic force in the American business system; role of entrepreneur in the conception, organization, and development of firms; and extensive use of small business cases. Priority for enrollment will be given to business seniors in their final year. Prerequisite: BUMA 301 and permission of instructor.

BUMA 402 ADVANCED PROBLEMS IN SMALL BUSINESS OPERATIONS II FWS 6 hrs.
Continuation of Advanced Problems in Small Business Operations I. Prerequisite: BUMA 401 and permission of instructor.

BUMA 411 BUSINESS POLICIES AND MANAGEMENT S 3 hrs.
Duties and responsibilities of top management in establishing policies, objectives and future plans for business organizations. Study of complex cases and actual experience in real situations involving policy decisions. Prerequisite: All required Management courses and BUAC 211 or 231. Required of all Management majors.

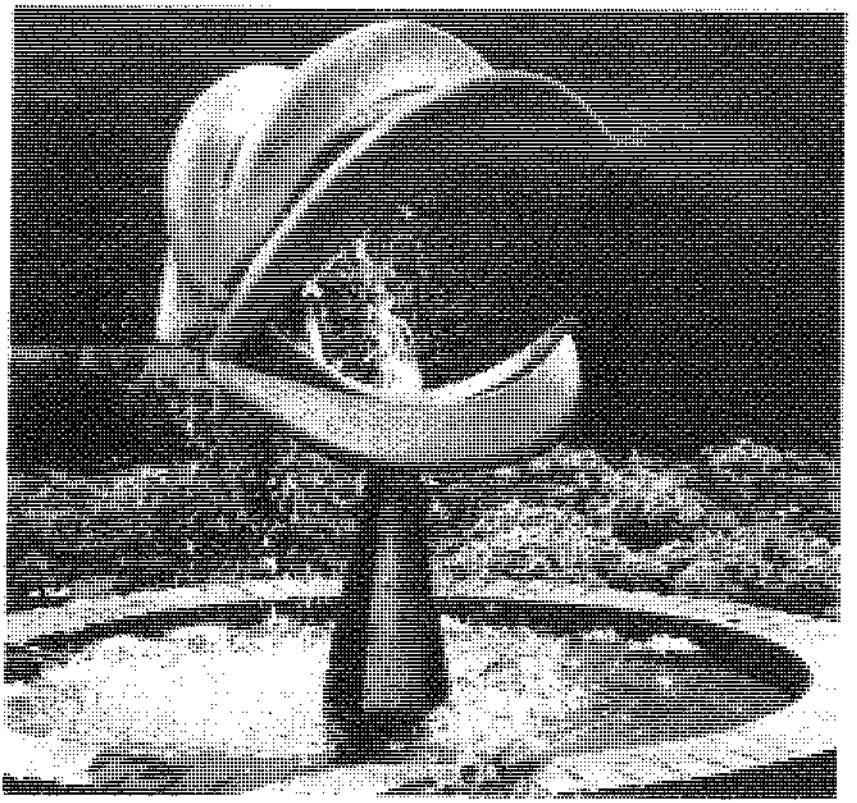
BUMA 421 CREDIT AND COLLECTION MANAGEMENT W 3 hrs.
The various kinds of credit (consumer and commercial) are discussed and the management of credit by business firms is studied. Provides information and understanding of credit operations of business for both students of business and practicing businessmen. Prerequisite: BUAC 201 and BUMA 103. Required of all Management majors.

BUMA 431 QUANTITATIVE DECISION-MAKING F 3 hrs.
Introductory course in management decision analysis including the use of probability concepts, models, linear programming, and network analysis. Examples are based on business applications. Prerequisite: MATH 121 and STAT 214.

BUMA 451 MANAGEMENT INTERNSHIP Arr 15 hrs.
Students must apply for this course at least five weeks prior to the end of the quarter preceding the quarter in which they wish to take the course. The purpose is to promote further learning about management functions and activities through actual business or agency environment. Students observe and participate in management activities which enable them to relate classroom theory to on-the-job experiences. Prerequisite: Management major and permission of the instructor. Course not eligible for competency or challenge credit.

BUMA 464, 465, 466 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
See BUAC 264, 265, 266 for course description.

BUMA 471 BUSINESS MANAGEMENT SEMINAR **Arr 3 hrs.**
Students share experiences and common problems, and familiarize one another with their on-the-job experiences. To be taken following BUMA 451.



Office Administration (Secretarial)

BUOA 51 REVIEW TYPING **F No Credit**

Offered only in Continuing Education night program and designed for people needing a general review of typing before entering Intermediate Typing or who wish to acquaint themselves with the new features of today's manual and electric typewriters for the purpose of improving typing speed and accuracy. No credit is offered for this course.

BUOA 101 SECRETARIAL ACCOUNTING **FWS 3 hrs.**

For students required to keep accounting records in a legal, medical, or other professional office or for those who will work in the accounting department of a small retail firm. Includes the fundamental accounting principles from opening a set of books through the closing process. This one-quarter course is not advised for those who plan to take Principles of Accounting. No credit allowed if credit already established in Principles of Accounting.

BUOA 111 SHORTHAND THEORY I **FW 4 hrs.**

For students with no previous knowledge of Gregg Shorthand. A presentation of the theory of Gregg Shorthand with a limited amount of dictation given between the rates of 40 and 60 words per minute. No credit will be given if student has high school credit in Gregg Shorthand.

BUOA 112 SHORTHAND THEORY II **WS 4 hrs.**

Continuation of BUOA 111. A review of Gregg Shorthand theory with emphasis on dictation between the rates of 60 to 80 words per minute. No credit will be given if student has more than one year of senior high school shorthand credit. Prerequisite: BUOA 111 or equivalent.

BUOA 119 STENOSCRIPT **3 hrs.**

A phonetic system of shorthand based on the principle of the reduction of longhand writing and use of the familiar alphabetic letters and sounds. Speeds of 80 words a minute in one quarter are usually attained. Emphasis is placed on business-type vocabulary but transference of skill will carry into any desired areas. (Offered as a night class only, on a demand basis).

BUOA 121 BEGINNING DICTATION **FWS 4 hrs.**

Review of principles of shorthand, application of office standards for mailable transcripts, dictation at rate of 80 to 100 words a minute and transcription at the rate of 20 to 35 words a minute. Prerequisites: (1) two quarters of shorthand theory or the equivalent and (2) BUOA 154, concurrent enrollment in BUOA 154, or permission of the instructor. Individualized course.

BUOA 141 SECRETARIAL BUSINESS MATHEMATICS **FS 4 hrs.**

Information and necessary skill development for solving business-related mathematical problems using the electronic calculator. The course content includes a review of fractions and decimals, percentage applications, interest, mark-up, and other business-related applications.

BUOA 151 BEGINNING TYPEWRITING I **FW 3 hrs.**

For students with no previous training. No credit will be given if student has received one year of high school credit.

BUOA 152 BEGINNING TYPEWRITING II **WS 3 hrs.**

No credit given if student has received two years of high school typing credit. Prerequisite: BUOA 151 or equivalent.

BUOA 154 INTERMEDIATE TYPEWRITING **FWS 3 hrs.**

Review of letter styles, forms of punctuation and other fundamentals. Direct dictation at typewriter. Intensive drill on letter placement with mailable copy. Development of speed required in the average office. Prerequisite: BUOA 152 or equivalent.

BUOA 221 TRANSCRIPTION MACHINES **FWS 3 hrs.**

Fundamental skills on various types of dictation and transcription machines. Emphasis is placed on machine operation, and speed and accuracy of transcription on the typewriter. Prerequisite: One year of high school typing. BUOA 154 or concurrent enrollment in BUOA 154.

BUOA 224 INTERMEDIATE DICTATION AND TRANSCRIPTION **FWS 4 hrs.**

A dictation speed of 90 to 110 words a minute is attained with emphasis on mailable transcripts. Prerequisite: BUOA 121 or permission of instructor.

BUOA 231 MEDICAL TRANSCRIPTION I **FWS 3 hrs.**

Helps develop competency with transcribing machines through use of medical correspondence and professional records. Prerequisite: BUOA 154, concurrent enrollment in BUOA 154, or permission of instructor, and HLTH 147 (Medical Terminology) or equivalent. Individualized course.

BUOA 232 MEDICAL TRANSCRIPTION II **FWS 3 hrs.**

A continuation of Medical Transcription 1. Individualized course. Prerequisite: BUOA 231.

BUOA 241 LEGAL TERMINOLOGY **FWS 3 hrs.**
For students who plan to work as legal secretaries. Acquaints students with legal terminology as used in legal forms with emphasis on spelling, meaning, and use of legal terms and phrases. Individualized course.

BUOA 242 LEGAL TRANSCRIPTION **FWS 3 hrs.**
Designed to develop competency with transcribing machines and magnetic typewriter through practical applications, including legal correspondence, documents, and word-processing used in law offices. Individualized course: machine transcription, five weeks; magnetic typewriter, five weeks. Prerequisite: BUOA 154, concurrent enrollment in BUOA 154, or consent of instructor.

BUOA 244 LEGAL PROCEDURES I **FS 3 hrs.**
Helps prepare student for work as secretary in a law office through study of American court systems, branches of civil and criminal law, and secretarial procedures relating to ethical behavior and office-management techniques. Includes practice in preparing legal forms and documents with emphasis on speed, accuracy, and mailability, along with procedures to help develop confidence and poise necessary in a professional office.

BUOA 245 LEGAL PROCEDURES II **W 3 hrs.**
Continuation of BUOA 244, which is a prerequisite.

BUOA 254 ADVANCED TYPEWRITING **WS 3 hrs.**
Study of tabulations, telegrams, memos, business letters and legal forms. Fundamental skills are developed on duplicating machines. Prerequisite: BUOA 154.

BUOA 261, 262, 263 INDEPENDENT STUDY IN SECRETARIAL SCIENCE **FWS Smr 1-3 hrs.**
Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed nine credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.5 or higher will be allowed to enroll for credit in this course. Consent of instructor required in all cases.

BUOA 265 ELECTRONIC WORD PROCESSING I **FWS 3 hrs.**
An introduction to electronic typing equipment. Basic proficiency in the record, playback, modification and service modes is developed. Provides an understanding of the utilization of such equipment in business and stresses the terminology unique to word processing. Prerequisite: BUOA 154 and 221 or permission of instructor.

BUOA 266 ELECTRONIC WORD PROCESSING II **FWS 3 hrs.**
Continuation of BUOA 265. Designed to develop proficiency in the use of word processing equipment as applied to business-related applications. An individualized course. Prerequisite: BUOA 265.

BUOA 271 SECRETARIAL PRACTICE **S 3 hrs.**
The skills of typing and shorthand and use of transcribing and other office machines are developed as related to office situations. Administrative and corresponding responsibilities of secretaries, business ethics and office etiquette are discussed and practiced. Prerequisites: BUOA 121 and 154.

BUOA 281 SECRETARIAL CO-OP **FWS 8 hrs.**
On-the-job training for a minimum of 20 hours a week at an approved work station in the business community. Job placement is on the basis of the student's program of study and employment goals. Prerequisite: Sophomore status and/or approval of instructor.

BUOA 282 SECRETARIAL CO-OP **FWS 15 hrs.**
On-the-job training for a minimum of 40 hours a week at an approved work station in the business community. Job placement is on the basis of the student's program of study and employment goals. Prerequisite: Sophomore status and approval of instructor.

BUOA 284, 285, 286 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**
See BUAC 264, 265, 266 for course description.

Job Entry Training

See Occupational Education (Vocational-Technical) section of this catalog.

Travel, Recreation and Hospitality Management

See Occupational Education (Vocational-Technical) section of this catalog.

Division of Computer Science, Mathematics and Engineering

For the Associate in Science degree, it is the function of the Division of Computer Science, Mathematics and Engineering to offer courses which:

1) *enable a student to complete two years of study directed toward ultimate completion of requirements for a baccalaureate degree in mathematics or engineering;*
2) *enable a student majoring in another area to complete a minor in mathematics or engineering;*
3) *will be a service to other divisions for students majoring in areas such as business, science, pre-professional, and vocational-technical.*

For the Bachelor of Science degree, it is the function of the Division of Computer Science, Mathematics and Engineering to offer courses which:

1) *train computer science, statistics, and mathematics professionals who are competent to work in industry, universities, government, or research institutes;*
2) *provide a strong undergraduate program for students contemplating graduate-school study;*
3) *provide courses, resources, and facilities which help other departments at Mesa College in meeting the educational needs of their students.*

James C. Davis, Division Chairman

Bailey, Britton, Hafner, Hawkins, Henson, Kerns, Kramer, Luke, Phillips, Ramsey, Rybak, Warner

COMPUTER SCIENCE, MATHEMATICS, AND STATISTICS

ASSOCIATE IN SCIENCE

FIRST YEAR

Fall Quarter	*Hrs.*
Mathematics 151	5
Science	5
English 111	3
Physical Education	1
Computer Science 161	3
	17

Winter Quarter	*Hrs.*
Mathematics 152	5
Science	5
English 112	3
Physical Education	1
Computer Science 131	5
	19

Spring Quarter	*Hrs.*
Mathematics 153	5
Science	5
English 113	3
Physical Education	1
Computer Science 132	5
	19

SECOND YEAR

Fall Quarter	*Hrs.*
Mathematics 254	5
Engineering 251	4
Social Science	3
Computer Science 230	3
	15

Winter Quarter	*Hrs.*
Mathematics 270	5
Engineering 252	4
Social Science	3
Computer Science 250	3
	15

Spring Quarter	*Hrs.*
Mathematics 230	5
Social Science	3
Computer Science 240	3
Statistics 200 or Computer Science 135	5
	16

THREE-YEAR CERTIFICATE PROGRAM

A three-year Certificate may be earned by completing all of the required subjects listed in the **Bachelor of Science** program and omitting the electives.

BACHELOR OF SCIENCE

THIRD YEAR

Fall Quarter	*Hrs.*
Math. or CSCI 361	3
Statistics 311	3
Computer Science 341	3
Electives	6
	15

Winter Quarter	*Hrs.*
Math. or CSCI 362	3
Statistics 312	3
Computer Science 330	3
Electives	6
	15

Spring Quarter	*Hrs.*
Mathematics 380	3
Statistics 313	3
Computer Science 373	3
Electives	6
	15

(Sequence continued on next page)

FOURTH YEAR

Fall Quarter	Hrs.
Mathematics 450	3
Computer Science 450	3
Electives	9
	15

Winter Quarter	Hrs.
Mathematics 451	3
Computer Science 440	3
Electives	9
	15

Spring Quarter	Hrs.
Mathematics 452	3
Computer Science 470	3
Electives	9
	15

General education requirements must be met in electives. Accounting should be taken as an elective.

ENGINEERING

ASSOCIATE IN SCIENCE

FIRST YEAR

Fall Quarter	Hrs.
English 111	3
Mathematics 151	5
Engineering 114	5
Physical Education	1
Chemistry	5
	19

Winter Quarter	Hrs.
English 112	3
Mathematics 152	5
Engineering 111	3
Physical Education	1
Physics	5
	17

Spring Quarter	Hrs.
English 115	3
Mathematics 153	5
Engineering 112	3
Physical Education	1
Physics	5
	17

SECOND YEAR

Fall Quarter	Hrs.
Physics	5
Mathematics 254	5
Engineering 251	4
Social Science or Humanities (1,2)	3
	17

Winter Quarter	Hrs.
Engineering 240	5
Mathematics 270	5
Engineering 252	4
Social Science or Humanities (1,2)	3
	17

Spring Quarter	Hrs.
Engineering 241	5
Mathematics 230	5
Engineering 245 (3)	4
Social Science or Humanities (1,2)	3
	17

(1) Students should take nine credits in one area. (e.g., history, economics or humanities)
(2) Students majoring in Civil Engineering should defer their Humanities until the junior year. A Diploma may be granted.
(3) Electrical Engineering students substitute Engineering 253.
Suggested electives are Engineering 100, 101, 115, Mathematics 161. (These courses will be very helpful in Mathematics and Engineering courses.)

Computer Science

CSCI 100 COMPUTERS IN OUR SOCIETY **FWS 3 hrs.**
An introduction to the organization of computer systems, including techniques and applications in such fields as art, education, economics, political science, literature, archaeology, history and medicine. Among topics are physical and logical aspects of computing; flowcharting and programming in high-level languages; data bases and information retrieval; numerical and non-numerical; and simulation.

CSCI 131 INTRODUCTION TO FORTRAN PROGRAMMING **F 5 hrs.**
Various math, science, and engineering problems are put in FORTRAN language and then run on the high speed computer. Problems using function subprograms; external statements; transferring data to and from tape; namelist statements; computer solution of engineering problems. Emphasis will be on logic, flow charting, input and output. Prerequisite: MATH 132 or equivalent.

CSCI 132 FORTRAN AND ENGINEERING PROBLEMS **WS 5 hrs.**
Advanced techniques in FORTRAN. An introduction to PL/I. Prerequisite CSCI 131 or ENGR 114.

CSCI 135 COBOL PROGRAMMING **F 5 hrs.**

CSCI 161 INTRODUCTION TO COMPUTING **F Smr 4 hrs.**
History of computers, descriptions of a typical computer, computer elements and symbolism, computer control and data flow, peripheral components, memory devices, problem-solving using a programming language.

CSCI 230 ASSEMBLY LANGUAGE PROGRAMMING **F 3 hrs.**
Computer structure and machine language; addressing techniques, digital representation of data, symbolic coding and assembly systems, selected programming techniques. Prerequisite: At least one high-level language or consent of instructor.

CSCI 240 COMPUTER ARCHITECTURE **S 3 hrs.**
A survey of computer architectures, including memory and addressing, arithmetic schemes, data channels, order codes, microprogramming, and multiprocessors. Prerequisite: CSCI 230; ENGR 251 recommended.

CSCI 250 INFORMATION STRUCTURES **W 3 hrs.**
Study of information representations and relationships between forms of representations and processing techniques. Transformation between storage media; referencing of information as related to the structure of its representation. Concepts of arrays, records, files, trees, list and list structure. Prerequisite: CSCI 230.

CSCI 330 PROGRAMMING LANGUAGES **F 3 hrs.**
Algorithmic languages, declarations, storage allocation, subroutines, coroutines and tasks. Principles and concepts which characterize various classes of high-level computer-programming languages. Prerequisites: CSCI 161, 230.

CSCI 341 ANALOG AND DIGITAL COMPUTER ELECTRONICS **W 3 hrs.**
Basic elements and technologies used to fabricate analog and digital computers; laboratory experience in constructing simple computer subsystems. Theory and application of hybrid computers. Prerequisite: ENGR 252.

CSCI 361 NUMERICAL ANALYSIS I **F 3 hrs.**
Elementary numerical analysis using the high speed computer. Much work will be done with subprogramming. Topics that may be considered are Taylor's Theorem, Truncating Errors, Iteration Processes, least square methods. Prerequisite: ENGR 115 and MATH 153.

CSCI 362 NUMERICAL ANALYSIS II **W 3 hrs.**
Numerical solution of algebraic and transcendental equations, systems of equations, ordinary and partial differential equations and integral equations, interpolation, finite differences, eigenvalue problems, relaxation techniques, approximations and error analysis. Prerequisite: CSCI 361.

CSCI 373 COMPUTER SYSTEMS **S 3 hrs.**
Assembly systems, executive system, structures, protection techniques, generation and maintenance, priority and scheduling techniques for batch-processing. Prerequisite: CSCI 230.

CSCI 380 MATHEMATICAL LOGIC AND THEORY **S 3 hrs.**
Mathematical logic, algebra of sets, equivalence and order relations, functions, cardinal and ordinal numbers, and the paradoxes of naive set theory. Prerequisite: MATH 230.

CSCI 440 LIST AND STRING PROCESSING LANGUAGES **W 3 hrs.**
List processing language development and use. Analysis of strengths and weakness of list processors: Snobal, IPL-V, LISP, etc. Prerequisites: CSCI 250, 330 recommended.

CSCI 450 COMPILER STRUCTURE **F 3 hrs.**
A review of major problem-oriented languages; bootstrapping techniques and metacompilers; languages for compiler writing, storage allocation and mapping, dynamic allocations, scanners, code emitters, one pass and multi-pass systems, code optimization. Prerequisites: CSCI 330, 373.

CSCI 470 OPERATING SYSTEMS DESIGN **S 3 hrs.**
Aspects of computer operating, system design and implementation. Prerequisite: CSCI 373.

CSCI 491 INDEPENDENT STUDY **1 hr.**

CSCI 492 INDEPENDENT STUDY **2 hrs.**

CSCI 495, 496, 497 SEMINARS **1 hr.**
Seminars conducted by faculty, students, and visiting professors.

Engineering

ENGR 100 SLIDE RULE **FWS 1 hr.**
Theory and operation of the slide rule, including use of trigonometric scales and log scales. Prerequisite: Students must have had or must be taking concurrently a course in trigonometry.

ENGR 101 VECTORS **WS 1 hr.**
A brief introduction to vector algebra, primarily applied to engineering problems.

ENGR 105 BASIC ENGINEERING DRAWING **FWS Smr 3 hrs.**
A course for students with little background for mechanical drawing and those who lack the basic fundamentals of drawing necessary for working with the space relationships of descriptive geometry. The course includes use of drawing instruments, lettering, geometric constructions, principles of orthographic projection, technical sketching, sectional and auxiliary views. Two lectures and four laboratory periods per week.

ENGR 111 ENGINEERING GRAPHICS AND DESIGN I **FWS Smr 3 hrs.**
An introductory course in engineering graphics emphasizing creative engineering design. Topics include creative design, freehand sketching, projection systems, dimensioning, descriptive geometry, and conventional practices as they are applied in the design process.

ENGR 112 ENGINEERING GRAPHICS AND DESIGN II **WS Smr 3 hrs.**
A continuation of engineering graphics including a detailed study of manufacturing and production processes, computer aided graphic design, and graphical representation of design data, all of which will be applied to creative design problems. Prerequisites: ENGR 111 and 114.

ENGR 114 INTRODUCTION TO FORTRAN PROGRAMMING **FWS Smr 5 hrs.**
Various math, science, and engineering problems are put in FORTRAN language and then run on the high speed computer. Problems using function subprograms; external statements; transferring data to and from tape; namelist statements; computer solution of engineering problems. Emphasis will be on logic, flow charting, input and output. Prerequisite: MATH 132 or equivalent.

ENGR 115 FORTRAN AND ENGINEERING PROBLEMS **S 5 hrs.**
Advanced techniques in FORTRAN. An introduction to PL/I. Prerequisite: CSCI 131 or ENGR 114.

ENGR 230 TOPOGRAPHICAL SURVEYING **F Smr 3 hrs.**
The fundamentals of map-making. Includes use of plane table and alidade, basic control, contour mapping, map reading. Taught primarily for non-engineers who are students in related fields; i.e., forestry, geology, archaeology, etc. Offered only if sufficient demand. Three lectures and one laboratory period per week. Prerequisite: MATH 131 or equivalent.

ENGR 231 ELEMENTARY SURVEYING **F 3 hrs.**
An introduction to the principles of surveying and mapping; familiarization with the basic instruments and their use. Two lectures and two laboratory periods per week. Prerequisites: MATH 139 or MATH 140.

ENGR 232 SURVEYING: CURVES AND EARTHWORK **W 3 hrs.**
The course includes calculations and field procedures for surveying circular, spiral and parabolic curves; route planning, location and design; measurement and computation of earthwork quantities; and slope staking. Two lectures and two laboratories per week. Prerequisite: ENGR 231.

ENGR 233 ADVANCED SURVEYING **S 3 hrs.**
Celestial observations to determine latitude, longitude, and true azimuth, photogrammetry, triangulation, state plane coordinate systems, and computer applications in surveying. Two lectures and two laboratories per week. Prerequisites: ENGR 231 and 232.

ENGR 240 STATICS **W 5 hrs.**
Topics include principles of statics, study of vectors, forces and couples, force systems and their resultants, force systems of equilibrium (truss analysis, flexible cables, cranes), static friction (pivot and belt), centroids, radii of gyration of areas and masses, and moments of inertia. Prerequisite: MATH 152 and PHYS 251, and to be taken concurrently with MATH 153.

ENGR 241 DYNAMICS **S 5 hrs.**
Principles of dynamics. Topics include angular and linear displacement, velocity and acceleration of particles and rigid bodies in motion, simple vibrations, and applications of principles of force-mass-acceleration, work-kinetic energy, the impulse-momentum to solution of problems of force systems acting on moving particles and rigid bodies. Prerequisites: ENGR 240 and MATH 153.

ENGR 251, 252, 253 CIRCUIT ANALYSIS I, II, III **FWS 4 hrs.**
An introduction to the fundamental principles of electrical engineering. Basic analysis techniques as applied to linear, lumped parameter, time invariant circuits. Principles of electronics, electromechanics, and instrumentation. Required of all engineers. Prerequisite: MATH 152 and PHYS 251 with concurrent enrollment in PHYS 252.

ENGR 255 INTRODUCTION TO THERMAL SCIENCES **S 4 hrs.**
Energy systems and processes, conservation of energy, environmental applications, pollution, heat transfer.

ENGR 259 INTRODUCTION TO ENERGY **WS 3 hrs.**
A survey of energy and modern energy production technology for non-engineering students. Topics include elementary treatments of mechanics, heat flow, chemical energy, electrical energy, nuclear energy and the energy-producing devices which use these principles. Prerequisite: High school algebra.

ENGR 291 INDEPENDENT STUDY **1 hr.**

ENGR 292 INDEPENDENT STUDY **2 hrs.**

Mathematics

(Some courses may be taken in one-hour modules)

MATH 15 BASIC MATHEMATICS **FWS Smr 3 hrs.**
Helps students reinforce knowledge and, as needed, reform the basic arithmetic processes. Includes a review of addition, subtraction, multiplication and division, followed by a careful treatment of decimals and fractions. Also may be taken in three two-week modules as follows:
MATH 14 (Module 1) ..... **1 hr.**
MATH 16 (Module 2) ..... **1 hr.**
MATH 17 (Module 3) ..... **1 hr.**

MATH 18, 19 BASIC MATHEMATICS **1 hr.**
A continuation of MATH 17. MATH 18 is Module 4 of the sequence, and MATH 19 is Module 5. Includes percentages, measures, metric system, ratio and proportion, averages, medians, squares and square roots. Note: Occupational Education students will be given applied problems in all Basic Mathematics modules.

MATH 20 BASIC ALGEBRA **FWS Smr 5 hrs.**
An introduction to algebra for the student having no algebra background or who is not sufficiently prepared to undertake college algebra. A study is made of basic algebraic processes: operations with signed numbers and literal expressions, linear equations, fractions, factoring, simultaneous equations, graphs, and quadratic equations.

MATH 100 MATHEMATICS LAB **FWS 1 hr.**
Theory and operation of calculators as applied to problems in mathematics, business, psychology, electronics, vocational technical, physical sciences and biological sciences.

MATH 101 TECHNICAL MATHEMATICS I **F 4 hrs.**
A review of algebra including fundamental concepts and operations, functions and graphs, systems of linear equations, determinants, factoring and fractions, quadratic equations, exponents and radicals. Prerequisite: MATH 20 or high school algebra.

MATH 102 TECHNICAL MATHEMATICS II **W 4 hrs.**
A concentrated study of trigonometry and additional topics of algebra with emphasis placed on applications in technical fields. Logarithms, trigonometric functions of angles, radian measure, vectors and oblique triangles, graphs of trigonometric functions, complex numbers and the j-operator, inequalities and variation. Electronic calculators used in problem solution.

MATH 103 TECHNICAL MATHEMATICS III **S 4 hrs.**
Advanced topics in algebra and trigonometry with an introduction to analytic geometry. Matrix algebra, graphical solutions of non-algebraic equations, equations of higher degree, progressions and the binomial theorem, trigonometric identities, inverse functions, straight lines, conic sections, parametric forms, introduction to statistics and empirical curve fitting. Extensive use is made of electronic calculators in problem solving.

MATH 105, 106, 107 ELEMENTS OF MATHEMATICS I, II, III **FWS 3 hrs.**
A course for prospective teachers in the elementary schools. Presents some of the basic principles which underlie mathematical processes and mathematical reasoning. Includes some areas of classical mathematics which are necessary for a working knowledge of the subject. Topics include logic and mathematical reasoning, number systems, some fundamental properties of geometric forms, the concept of a function, linear and quadratic functions, and some characteristics of modern mathematics. Prerequisite: Consent of instructor. (MATH 105 offered in summer session.)

MATH 110 DATA PROCESSING MATHEMATICS **W 5 hrs.**
This course is directed to those students who are studying in the fields of data processing and computer programming. Included are applications of number systems with other bases to computers, some number theory, matrix methods, linear programming, study of logic, Boolean algebra, introduction to trigonometry, and the study of sets as applied to the computer. Prerequisite: MATH 131 or equivalent.

MATH 114 TRAVEL AND RECREATION MATHEMATICS I **FW 3 hrs.**
A course designed to provide the mathematical tools for solving the types of problems which arise in the travel and recreation industry. Includes review of operations and terminology of arithmetic and introduction to elementary topics in algebra, geometry, and trigonometry; percentage; weights and measures; graphs; mathematics of games, business and everyday needs.

MATH 115 TRAVEL AND RECREATION MATHEMATICS II **WS 3 hrs.**
A continuation of MATH 114.

MATH 121 MATHEMATICAL FOUNDATIONS OF BUSINESS **FWS Smr 5 hrs.**
Designed to provide business students with basic quantitative tools and methods for solving business problems. Includes an intuitive study of functions and their graphs, linear programming, and differential and integral calculus techniques important to development of analytical competence in administrative decision-making. Prerequisite: MATH 131 or two years of high school algebra.

MATH 124 CALCULUS FOR BIOLOGICAL SCIENCES **WS 5 hrs.**
Topics include elementary set theory, functions and relations, derivatives, trigonometry, series and sequences, integration, exponential and logarithmic function, multiple integration, and partial derivatives. Taught from an intuitive point of view with many examples from the biological sciences. Prerequisite: MATH 132 or consent of instructor.

MATH 127 MATHEMATICS OF FINANCE **WS 5 hrs.**
Mathematical methods to the solution of business problems. The course starts with the treatment of simple interest and simple discount and develops gradually and logically through the topics of compound interest, annuities, perpetuities, bonds, and depreciation. Prerequisite: MATH 131.

MATH 131 COLLEGE ALGEBRA I **FWS Smr 3 hrs.**
The systems of integers, rational numbers, real numbers, and complex numbers are studied. Sets and set theory, linear and quadratic relations, exponential and logarithmic functions are included. Prerequisite: MATH 20 or one year of high school algebra.

MATH 132 COLLEGE ALGEBRA II **FWS Smr 3 hrs.**
A continuation of MATH 131. Topics include functions and graphs, systems of equations, matrices, complex numbers, higher-degree equations, inequalities, progressions and the binomial theorem. Prerequisite: MATH 131 or consent of instructor.

MATH 138 COLLEGE ALGEBRA AND TRIGONOMETRY I **FWS Smr 5 hrs.**
A course in freshman mathematics for the mathematics or science student. Topics include properties of the real number system, equations and inequalities in one variable, and polynominal, exponential, logarithmic and circular functions. Prerequisite: MATH 131 or three years of high school math and a good mathematics entrance exam score. Trigonometry recommended.

MATH 139 COLLEGE ALGEBRA AND TRIGONOMETRY II **FWS 5 hrs.**
A continuation of Mathematics 138. Topics include inverse circular functions and conditional equations, matrices and determinants, systems of equations, complex numbers and vectors, sequences, series, math induction, binomial theorem, rational and trigonometric functions, and some probability.

MATH 140 TRIGONOMETRY **FWS Smr 3 hrs.**
Emphasizes the circular and trigonometric functions and methods of solving right and oblique triangles. The inverse trigonometric functions, conditional equations, and trigonometric identities are included. Complex numbers are covered through DeMoivre's Theorem. Prerequisite: MATH 131 or equivalent. Trigonometry may also be taken in one-hour modules:

MATH 141 Logarithms ..... ⅓ hr.
MATH 142 Right and Oblique Triangles ..... ⅓ hr.
MATH 143 Conditional Equations and Trigonometric Identities ..... ⅓ hr.

MATH 144, 145 ADVANCED TRIGONOMETRY ⅓ hr.
A modularized continuation of MATH 140. Includes inverse functions and vector functions.

MATH 151 ANALYTIC GEOMETRY WITH CALCULUS **FWS Smr 5 hrs.**
A combined course of analytic geometry and calculus. Fundamental principles of beginning analytic geometry, including different forms of the equations of straight line, circles, and parabolas. Elementary phases of limits, continuity, derivations, and various applications of these topics are considered. Prerequisite: MATH 139 or equivalent.

MATH 152 CALCULUS **FWS 5 hrs.**
A continuation of Mathematics 151. Differential and integral calculus combined with analytic geometry, together with applications. Special emphasis in calculus on the transcendental functions. Prerequisite: MATH 151.

MATH 153 CALCULUS **FWS 5 hrs.**
A continuation of MATH 152, with special emphasis placed on polar coordinates, conic sections, hyperbolic functions and vectors in a plane. The formulas and methods of integration and applications of integration are covered. Prerequisite: MATH 152.

MATH 161 PROGRAMMABLE CALCULATOR **WS 1 hr.**
Theory and operation of the programmable calculator. Prerequisite: MATH 140 or consent of instructor.

MATH 230 INTRODUCTION TO LINEAR ALGEBRA **S 5 hrs.**
This course is designed to give students a foundation so that they can apply the notions and techniques of the algebra and geometry of vector spaces, linear transformations and matrices, linear equations, quadratic forms and symmetric matrices, and elementary Eigenvalue theory. Also prepares the student for advanced work by developing his powers of abstract reasoning. Prerequisite: MATH 254.

MATH 254 CALCULUS **FWS Smr 5 hrs.**
The last course in the sequence of courses in analytic geometry and calculus. This course is designed to cover the topics of vectors in three-dimensions, partial derivatives of functions of several variables, multiple integration, and infinite series. Prerequisite: MATH 153.

MATH 270 INTRODUCTION TO DIFFERENTIAL EQUATIONS **WS 5 hrs.**
An introduction to the formal study of differential equations with applications. Some of the topics covered are: equations of order one, elementary applications, nonhomogeneous equations, variation of parameters, inverse differential operators, Laplace transforms, and nonlinear equations. Prerequisite: MATH 254 or consent of instructor.

MATH 291 INDEPENDENT STUDY **1 hr.**

MATH 292 INDEPENDENT STUDY **2 hrs.**

MATH 361 NUMERICAL ANALYSIS I **F 3 hrs.**
Elementary numerical analysis using the high speed computer. Much work will be done with subprogramming. Topics that may be considered are Taylor's theorem, truncating errors, iteration processes, least square methods. Prerequisite: ENGR 115 and MATH 153.

MATH 362 NUMERICAL ANALYSIS II **W 3 hrs.**
Numerical solution of algebraic and transcendental equations, systems of equations, ordinary and partial differential equations and integral equations, interpolation, finite differences, eigenvalue problems, relaxation techniques, approximations and error analysis.

MATH 380 MATHEMATICAL LOGIC AND THEORY **S 3 hrs.**
Mathematical logic, algebra of sets, equivalence and order relations, functions, cardinal and ordinal numbers, and the paradoxes of naive set theory. Prerequisite: MATH 230.

MATH 401 THE METRIC SYSTEM **1 hr.**
A course for learning the metric system through a series of carefully planned experiences, with emphasis on study and work through activities with the metric tape-measure and circular conversion devices.

MATH 431 ABSTRACT ALGEBRA **F 3 hrs.**
Preliminary examination of algebraic systems: groups, rings, fields, vector spaces, linear transformations, matrices, etc. Prerequisite: MATH 230.

MATH 450 INTRODUCTION TO COMPLEX VARIABLES **W 3 hrs.**
Complex differentiation and integration, analyticity, Cauchy's integral theorem and formula, Taylor and Laurent series, calculus of residues. Prerequisite: MATH 254.

MATH 451 ADVANCED CALCULUS I **S 3 hrs.**
Calculus of one variable, the real number system, continuity differentiation, integration and Reimann-Stieltjes integration. Prerequisite: MATH 254.

Statistics

STAT 200 INTRODUCTION TO PROBABILITY AND STATISTICS **FWS Smr 5 hrs.**
An introductory course in statistics and statistical methods, primarily intended for the agricultural sciences, business administration, economics, home economics, psychology, sociology, geology, and the medical sciences. Examples and exercises have been chosen from all of these subject areas. Some of the topics discussed are: analysis of data, elementary probability, binomial distribution, random sampling, student's t-distribution, regression and correlation, chi-square, F-distribution, and analysis of variance. Prerequisite: MATH 131 or two years of high school algebra.

STAT 214 STATISTICAL APPLICATIONS IN BUSINESS **WS 5 hrs.**
An introduction to the methods used in business for the collection and analysis of numeric data for decision-making purposes. The course covers probability and decision theory; sample design; classical distribution; statistical inference; methods of estimation and prediction as they apply to business situations.

STAT 311 STATISTICAL METHODS **F 3 hrs.**
Simple and multiple analysis of covariance, introduction to non-parametric statistical techniques, design of experiments. Prerequisites: MATH 153 and STAT 200, or consent of instructor.

STAT 312 CORRELATION AND REGRESSIONS **W 3 hrs.**
Graphical and numerical analysis for simple and multiple correlation and regression problems, both linear and curvilinear. Time series and multivariate analysis, least squares. Prerequisites: MATH 153 and STAT 200, or consent of instructor.

STAT 313 SAMPLING TECHNIQUES **S 3 hrs.**
Survey designs, simple random, stratified and systematic samples; systems of sampling; methods of estimation; costs. Prerequisites: MATH 153 and STAT 200, or consent of instructor.

STAT 325 STATISTICAL APPLICATION OF SOCIAL STUDIES AND PSYCHOLOGY **S 3 hrs.**
Analysis of covariance; multiple regression; linear models; design of experiments; sampling. For natural or social science students. Prerequisite: STAT 200.

STAT 495, 496, 497 SEMINARS **1 hr.**
Seminars conducted by faculty, students, and visiting professors.

Division of Fine Arts

The Division of Fine Arts includes the areas of Art, Drama, and Music, which provide courses for the continued cultural development of students by bringing them into contact with the cultures of the past and present. Such studies invariably define the influence of the arts on intellectual and moral development that contribute to a fuller and nobler life for the individual and society.

Darrell C. Blackburn, Division Chairman

Birkedahl, P. Carmichael, DeVinny, Guyton, Koeninger, Meyers (Head, Art Department), Ritchie, W. Robinson (Head, Speech and Drama Department), Runner, A. Sanders, D. Sanders, Schneider, M. S. Sullivan.

ASSOCIATE IN ARTS DEGREE

Students who wish to work toward the Associate in Arts degree should refer to the suggested General Education curriculum elsewhere in this catalog. Faculty advisers will assist Associate in Arts candidates in planning a selection of electives or course substitutions that will best suit their individual objectives.

Study directed toward the Associate in Arts degree will serve as a basis for the Bachelor of Arts in Visual and Performing Arts at Mesa College or for transfer to another institution for a degree in performing in a specific area or teaching.

BACHELOR OF ARTS DEGREE IN VISUAL AND PERFORMING ARTS

Art, music, dance and drama are combined to provide students with a broad concept of the arts as they relate to and influence each other and also as they relate to living. Through this concept, students may broaden their experience before specializing in graduate school or, if they terminate their formal education at the baccalaureate-degree level, they will have the advantage of greater knowledge of the arts as a whole. Also, the success of community arts programs is served by individuals who have competency in more than one area.

The Visual and Performing Arts degree offerings are flexible and broad enough to allow considerable freedom in planning a program of study to fit individual talents and needs, including the attainment of the intermediate Associate in Arts degree described above.

Course of Study for B.A. Degree in Visual and Performing Arts

General Education requirements including Physical Education	45 hours
Man Creates	9 hours
Practicum in the Arts	6 hours
Civilization and the Arts	9 hours
Aesthetics or Seminar in Critical Analysis of the Arts	3 hours
Arts Management	3 hours
Fine Arts Electives	20 hours
Other Electives	88 hours
TOTAL, includes independent study and credit by examination	183 hours

Fine Arts

FA 101, 102, 103 MAN CREATES **FWS 3 hrs.**

An inter-disciplinary survey of the creative efforts of man as they relate to each other. Art, drama, and music will be compared, with similarities stressed.

PRACTICUM IN THE ARTS **FWS 6 hrs.**

Required of Visual and Performing Arts majors in the total of six hours. Students with a strong background in one of the arts areas will be required to take qualifying classes outside their strength area, preferably three hours in each of the other two disciplines. Practicum requirements may be met by selecting 6 hours from the following freshman and sophomore classes:

ART 112, 115, 131, 132, 151, 152, 180, 190, 220, 230, 240, 270.
DRAM 114, 117, 118, 119, 121, 122, 123, 124, 125, 126, 129, 142, 143, 147, 148, 149, 214, 215, 217, 218, 219, 222, 244, 245, 246, 247, 248, 249, 251, 252, 253.
MUS 127, 128, 129, 137, 138, 139, or any course carrying the prefix AMUS or PERF.

FA 301, 302, 303 CIVILIZATION AND THE ARTS **FWS 3 hrs.**
A history course bringing together the viewpoints of social scientists, the historian, humanist, writer, performer, and artist.

FA 401 SEMINAR IN CRITICAL ANALYSIS OF THE ARTS **F 3 hrs.**
A study of the factors involved in making discriminating judgments for personal development.

FA 402 ARTS MANAGEMENT **W 3 hrs.**
The business aspects of producing a play, concert, or exhibition. Publicity, dealing with agents, artists, union representatives, tickets, accounting, and scheduling will be studied with practical experience gained from college productions.

FA 403, 404 MULTI-MEDIA PRODUCTION **WS 3 hrs.**
Bringing together the various arts with a combined effort resulting in a public performance.

Art

ART 112 EARLY CHILDHOOD ART **W 3 hrs.**
Children have things to say. This course trains adults to see what children's art means. Methods of teaching pre-school art and stages of manipulative development and self-expression are described and observed. Working with pre-school children is part of the laboratory work. A service course for Early Childhood Education majors. Lecture: 3 hours; laboratory: arranged.

ART 115 CRAFTS SURVEY **FW 3 hrs.**
A lecture-demonstration survey of materials and processes suitable for leisure activity and recreation programs for people of all ages. A service course for Recreation majors. Lecture: 3 hours.

ART 151, 152 DRAWING **FWS 3 hrs.**
Methods of analyzing visual phenomena are taught through observations of live models in the classroom, still-life groupings, the work of other artists, and on-site observations of Western Colorado landscape. Drawing skills are developed through such media as graphite charcoal, black lead, pen and brush with ink, conté crayon, litho crayon, and water color. Open to all students. Studio: 6 hours.

ART 180 THREE-DIMENSIONAL FORM **FWS 3 hrs.**
Problems in basic sculptural shape, space and surface, including relief, round and kinetic design. Processes include subtraction, addition and construction, in a variety of media. Functional and esthetic considerations make this course an important prerequisite to work in other three-dimensional fields such as pottery and jewelry as well as sculpture. Lecture: 2 hours; studio: 4 hours.

ART 190 TWO-DIMENSIONAL FORM **FWS 3 hrs.**
A survey of the elements of visual art form, problems in pictorial composition and illusion, and theory and uses of color. The medium used is acrylic paint and the basic paint-mixing processes are covered. The study emphasizes abstract form as it relates to painting and other surface-design media such as weaving. Lecture: 2 hours; studio: 4 hours.

ART 211, 212, 213 ART HISTORY **FWS 3 hrs.**
Chronology of art periods and analysis of styles in Western art from prehistory to the present century, with slides of paintings, sculpture and architecture characteristic of the cultures and artists covered. Appropriate lateral studies of the art of the Orient and Africa are included.

ART 220 PROCESSES AND MEDIA—JEWELRY **FWS 3 hrs.**
Basic metal processes of cutting, joining, casting and surfacing in the design of jewelry and miniature sculpture forms. Lecture: 1 hour; studio: 5 hours. Prerequisite: ART 180 or permission of instructor.

ART 230 PROCESSES AND MEDIA—FIBERS **FWS 3 hrs.**
An introduction course providing an overview of basic techniques in fabric design. Emphasis is on the creative aspects of designing in processes such as batik, macrame, tie-dye, hooking, and weaving. Lecture: 1 hour; studio: 5 hours. Prerequisite: ART 190 or permission of instructor.

ART 240 PROCESSES AND MEDIA—CERAMICS **FW 3 hrs.**
A survey of basic ceramic hand-building, surface texturing and glazing processes. The study includes theory and experimentation with properties of clay and information about sources and historical uses of ceramic materials. Lecture: 1 hour; studio: 5 hours. Prerequisite: ART 180 or permission of instructor.

ART 245 CERAMICS—POTTER'S WHEEL **WS 3 hrs.**
An introduction to the use of the wheel for making pottery forms. Mixing of glazes and decoration processes are practiced. The history of ceramic materials and styles is continued from ART 240. Lecture: 1 hour; studio: 5 hours. Prerequisite: ART 240.

ART 248 CERAMIC WORKSHOPS **Sm 3 hrs.**
Specially scheduled intensive experience in such processes as raku, primitive pottery, decoration and others, to be arranged with guest or resident faculty.

ART 250 FIGURE DRAWING **WS 3 hrs.**
Academic studio drawing emphasizing the tradition of the human figure. Contemporary concepts of composition and technique are stressed using quality drawing tools and surfaces. Nude models, plaster casts, human bones, anatomy charts and the work of various figurative artists are utilized. Studio: 6 hours. Prerequisite: ART 151, 152.

ART 270 PROCESSES AND MEDIA—PRINTMAKING I **FW 3 hrs.**
A survey of relief and intaglio print processes, including some history of the materials, techniques and forms, while emphasizing today's uses of the media. Lecture: 1 hour; studio: 5 hours. Prerequisites: ART 151, 152, 190.

ART 275 PROCESSES AND MEDIA—PRINTMAKING II **WS 3 hrs.**
A survey of lithographic and serigraphic print processes including some history of the materials, techniques and forms, while emphasizing today's uses of the media. Lecture: 1 hour; studio: 5 hours. Prerequisites: ART 151, 152, 190.

ART 281, 282, 283 PROCESSES AND MEDIA—SCULPTURE **FWS 3 hrs.**
Two or three sculpture processes are studied each quarter and, during the year, include subtractive, additive, casting, and construction. Materials are wood, stone, clay, plaster, metal, and plastics. Subject matter ranges from human anatomy to abstraction. Lecture: 1 hour; studio: 5 hours.

ART 291, 292, 293 PAINTING **FWS 3 hrs.**
A studio course introducing the fundamental concepts and techniques of painting. Studies include the human figure, color analysis, and the elements of composition. Media include oil and acrylic paints. Both traditional and modern methods of paint application are introduced through lectures and demonstrations. Lecture: 1 hour; studio: 5 hours.

ART 301, 302, 303 INDEPENDENT STUDY IN ART **FWS 1-3 hrs.**
By permission of the instructor.

ART 310 EXHIBITIONS AND MANAGEMENT **FWS 3 hrs.**
Preparation and presentation of exhibitions, including matting, framing, and pedestals, as well as exhibit design, installation, shipment and other responsibilities of gallery management. Studio management study includes contracts, consignments, copyrights, donations and other concerns of the studio artist. Lecture: 3 hours; laboratory: 3 hours. On and off campus.

ADVANCED STUDIO (300 LEVEL) **FWS 3 hrs.**
Scheduled on an irregular basis, these courses may emphasize specific problems or media, such as landscape painting, kiln construction, welded sculpture and others, or a general studio may include a variety of media and individually contracted works. Prerequisites: ART 151, 152, 180, 190, 211, 212, 213 and six credits selected from Processes and Media courses, 200-level.

ART 321, 322, 323 JEWELRY
ART 341, 342, 343 CERAMICS
ART 351, 352, 353 DRAWING
ART 371, 372, 373 PRINTMAKING
ART 381, 382, 383 SCULPTURE
ART 391, 392, 393 PAINTING

ART 401, 402, 403 INDEPENDENT STUDY IN ART **FWS 1-3 hrs.**
By permission of the instructor.

ART 411, 412, 413 ART HISTORY SEMINAR **FWS 3 hrs.**
A reading and seminar course for depth study of individually selected areas of world art history and the relationships of the various periods to the art of today. One quarter deals entirely with the art of the 20th century. Prerequisites: FA 301, 302, 303.

ADVANCED STUDIO (400 LEVEL) **FWS 3-5 hrs.**
A continuation of studio work. Prerequisites: 9 hours of 300-level Advanced Studio work.

ART 421, 422, 423 JEWELRY
ART 441, 442, 443 CERAMICS
ART 451, 452, 453 DRAWING
ART 471, 472, 473 PRINTMAKING
ART 481, 482, 483 SCULPTURE
ART 491, 492, 493 PAINTING

Drama and Dance

The student majoring in the Visual and Performing Arts with a Drama emphasis must have experience in both the technical and the performing aspects of the theatre. Service on four technical crews is required and the student must be crew chief for at least one of these crews. Also the student majoring in Drama must take at least three classes in the Speech Department.

DRAM 114 SUMMER THEATRE **Smr 3 hrs.**
Introduces the student to a professional summer-theatre experience. The student is expected to participate in all phases of the theatre operation including acting, technical work, directing, office management, etc. A student who registers for summer theatre should not enroll in any other class for that time. Five plays are presented in a six-week schedule.

DRAM 115 PROBLEMS IN MODERN THEATRE **Arr 2 hrs.**
This is a cultural enrichment course which involves a tour to a theatrical center for the observance of professional productions of dramas, musicals, operas, or other forms of stage entertainment. Papers and discussions are used for evaluation.

DRAM 117, 118, 119 PLAY PRODUCTION **FWS 1 hr.**
A practical course in stagecraft concerned with the production of plays. The students work in all phases of production, and the hours are arranged for the laboratory sessions.

DRAM 121 BEGINNING BALLET **1 hr.**
Basic elements of ballet concerned with body control and technique.

DRAM 122 INTERMEDIATE BALLET **1 hr.**
A continuation of Beginning Ballet (DRAM 121)

DRAM 123 ADVANCED BALLET **1 hr.**
A continuation of Intermediate Ballet (DRAM 122)

DRAM 124 BEGINNING MODERN DANCE **1 hr.**
Practical experience with movement technique in modern dance. Problem-solving in shape, force, space, time and relationship.

DRAM 125 INTERMEDIATE MODERN DANCE **1 hr.**
A continuation of Beginning Modern Dance

DRAM 126 ADVANCED MODERN DANCE **1 hr.**
A continuation of Intermediate Modern Dance.

DRAM 128 TAP DANCE **W 2 hrs.**
Basic course in a popular rhythmic American dance form that combines movement and coordinated sounds.

DRAM 129 BEGINNING MODERN JAZZ DANCE **S 1 hr.**
The concept of jazz as a dance form.

DRAM 141 THEATRE PRACTICE: INTRODUCTION **F 2 hrs.**
This course introduces the student to the theatre and the business of play-production and audience responsibility. Types of plays, styles of production and audience critique are all considered.

DRAM 142 MAKE-UP **W 2 hrs.**
For the student who is interested in theatrical make-up. All phases of make-up will be covered, from straight make-up to the character making use of crepe hair, prosthesis, latex, and other materials.

DRAM 143 COSTUMING **S 2 hrs.**
For the student who is interested in costuming and the history of costumes. Helps the actor understand the actual wearing of the costumes of different periods. The student will design and construct one costume item.

DRAM 147, 148, 149 DRAMA PERFORMANCE **FWS 1 hr.**
A student must participate in a major production on the campus. His grade will be dependent upon his final performance and the preparatory work on his character.

DRAM 211 CREATIVE PLAY ACTIVITIES—DANCE **F 3 hrs.**
A course designed for students who will be working with children. Emphasis is placed on creative movement exploration through the Laban theories of body, effort, space, and relationship.

DRAM 213 CREATIVE PLAY ACTIVITIES—DRAMA **S 3 hrs.**
To introduce the student to the use of dramatic activities in a learning situation. The subject matter would be of interest to anyone in the field of child care, general education, social work, religious education and/or recreation work.

DRAM 214 SUMMER THEATRE Smr 3 hrs.
See Drama 114.

DRAM 215 PROBLEMS IN MODERN THEATRE Arr. 2 hrs.
See Drama 115.

DRAM 217, 218, 219 PLAY PRODUCTION FWS 1 hr.
See Drama 117, 118, 119.

DRAM 221 REPERTORY DANCE PERFORMANCE FWS 1 hr.
Provides students an opportunity to participate directly in the production of a dance piece choreographed by a faculty member or guest artist.

DRAM 222 IMPROVISATION AND COMPOSITION—DANCE W 3 hrs.
Theory and practice in the basic principles of dance composition.

DRAM 234, 235, 236 DEVELOPMENT OF CINEMA FWS 2 hrs.
Helps students develop an understanding and appreciation of the motion-picture film as art, propaganda, and educational media. Also provides opportunity to observe the cinema's influence upon society. This is accomplished through the study of filming techniques, audience reaction, reviews, and critical essays of films. The student is expected to do a critical analysis of each film used in class.

DRAM 244 THEATRE PRACTICE: SCENE CONSTRUCTION F 2 hrs.
To expose the student to construction techniques and methods of moving scenery on the stage. The areas covered are: construction, painting, and handling of scenery, and stage properties and effects.

DRAM 245 THEATRE PRACTICE: LIGHTING AND SOUND W 2 hrs.
A study of the special problems associated with lighting and sound for educational and community stage productions. Includes basic lighting design, elements of electricity, color in light, light sources, stage-lighting instruments, and lighting design for non-commercial productions.

DRAM 246 THEATRE PRACTICE: SCENE DESIGN S 2 hrs.
Emphasizes practical application of basic design principles to modern staging methods. Stresses the function of scene design in its relation to the play, and the visual contribution of design to the production as a whole, as well as working procedures and presentation techniques. The areas covered are: scene design and the theatre, scene design as a visual art, and the design idea.

DRAM 247, 248, 249 DRAMA PERFORMANCE FWS 1 hr.
See DRAM 147, 148, 149.

DRAM 251 STAGE MOVEMENT F 3 hrs.
The analysis and practice of stage movement including the basic techniques in gesture, mime and pantomime as related to period drama, modern drama and musical comedy. Emphasis is placed on developing an awareness of the use of the body as a means of expression.

DRAM 252 IMPROVISATIONAL ACTING W 3 hrs.
This is not a regular acting course, but one in which the student has opportunity to become aware of his surroundings and then attempt, through observation, concentration and imagination, to make use of often neglected or overlooked details of human behavior. Includes group, duo, and individual projects.

DRAM 253 BEGINNING ACTING S 3 hrs.
Includes fundamentals of stage presence in both proscenium and arena staging, basic acting techniques using body and voice, and exploration of the various techniques of acting. Students perform solo, duo, and group scenes.

DRAM 254, 255, 256 INDEPENDENT STUDY IN DRAMA FWS 3 hrs.
This course is planned for the student who wishes to do an in-depth study of some aspect of theatre under the guidance of an instructor on the campus.

DRAM 314 SUMMER THEATRE Smr 3 hrs.
See DRAM 114.

DRAM 315 PROBLEMS IN MODERN THEATRE W 2 hrs.
See DRAM 115.

DRAM 317, 318, 319 PLAY PRODUCTION FWS 1 hr.
See DRAM 117, 118, 119

DRAM 321 REPERTORY DANCE PERFORMANCE FWS 1 hr.
See DRAM 221 for course description.

DRAM 324 DANCE PRODUCTION S 3 hrs.
Analysis and practice in the elements of publicity, lighting, costuming and makeup for dance. Emphasis is placed on the non-traditional forms in dance production.

DRAM 331, 332, 333 HISTORY OF THEATRE FWS 2 hrs.
A study of the historical aspects of the theatre as an institution and its relationship to the other arts and to the social and economic environment.

DRAM 344 DRAFTING FOR THE THEATRE F 3 hrs.
A specialized course in the techniques of drafting ground plans and working drawings for the theatre. Areas covered: the ground plan, front elevations, detail drawings, full-scale drawings, sight-line drawings. Offered alternate years.

DRAM 345 STAGE LIGHTING W 3 hrs.
Advanced training in the art of stage lighting and design. Offered alternate years.

DRAM 346 SCENE DESIGN S 3 hrs.
Gives the student experience in scene design and special experience in color renderings for major type and style of production. Offered alternate years.

DRAM 347, 348, 349 DRAMA PERFORMANCE FWS 1 hr.
See DRAM 147, 148, 149.

DRAM 351 DIALECTS IN ACTING F 3 hrs.
An introduction to the use of dialects in performance. Students learn basic stage speech and other dialects through the performance of scenes with dialect. It is recommended that any student taking this course be familiar with the phonetic alphabet and voice control. Offered alternate years.

DRAM 352 STYLES IN ACTING W 3 hrs.
Introduces the actor to the various styles of acting used in the Classical, Elizabethan, Romantic, melodrama, and realistic dramas. The student will perform scenes from these different periods. Offered alternate years.

DRAM 353 ACTING PROJECT S 3 hrs.
An in-depth study of different performance techniques used in various styles of acting and in different genres of writing. To be presented as an acting recital or a senior project. Offered alternate years.

DRAM 414 SUMMER THEATRE W 3 hrs.
See DRAM 114.

DRAM 415 PROBLEMS IN MODERN THEATRE W 2 hrs.
See DRAM 115.

DRAM 417, 418, 419 PLAY PRODUCTION FWS 1 hr.
See DRAM 117, 118, 119.

DRAM 421 REPERTORY DANCE PERFORMANCE FWS 1 hr.
See DRAM 221 for course description.

DRAM 444 TECHNICAL EXPERIENCE IN LIGHTING AND SOUND F 3-5 hrs.
Work experience in local high school, church, community theatre or college production. Students organize work crews, design and hang scenery and lights, and run the production. No formal classwork other than student-instructor conferences and on-the-job experience. Offered alternate years.

DRAM 445 TECHNICAL EXPERIENCE IN STAGE DESIGN AND CONSTRUCTION W 3-5 hrs.
Work experience as described above. Student designs and oversees construction of a set for a local production. Offered alternate years.

DRAM 446 TECHNICAL EXPERIENCE IN COSTUMING S 3-5 hrs.
Work experience as described above. Student designs and oversees construction of costumes for a local production. Offered alternate years.

DRAM 447, 448, 449 DRAMA PERFORMANCE FWS 1 hr.
See DRAM 147, 148, 149.

DRAM 451 BEGINNING DIRECTING F 3 hrs.
Introduces the student to fundamentals of play direction from play selection to the final performance. The student works on scenes, examining them in depth and putting them on stage in class for critical viewing. Offered alternate years.

DRAM 452 ADVANCED DIRECTING W 3 hrs.
The student is expected to direct and produce a one-act play in this course. He is responsible for organizing the production, conducting the rehearsals, and presenting the play to the public. Offered alternate years.

DRAM 453 DIRECTING PROJECT S 3 hrs.
The student will do a senior project in directing. It may be a full-length play, a children's play or a series of one-acts. The student is responsible for the entire production. Offered alternate years.

DRAM 454, 455, 456 INDEPENDENT STUDY IN DRAMA FWS 3 hrs.
See DRAM 254, 255, 256.

Music

MUS 114, 115, 116 ELEMENTARY THEORY **FWS 3 hrs.**
Thorough groundwork in the elements of music. A detailed study is made of keys, scales, modes, intervals, triads, seventh chords, etc. The techniques and rules of simple, four-part harmony are studied and practiced and keyboard techniques for the above are developed. Requires prior knowledge of or concurrent enrollment in piano.

MUS 117, 118, 119 SIGHT-SINGING AND EAR TRAINING **FWS 2 hrs.**
Sight-singing is developed by practice in vocal recognition of tonal and rhythm patterns and by singing graded musical exercises. Ear training is developed by means of rhythmic, melodic, and harmonic dictation exercises. The course should be taken in conjunction with Elementary Theory since materials in both courses correlate.

MUS 127, 128, 129 PIANO CLASS **FWS 2 hrs.**
Open to all students, but recommended for those students studying Elementary Theory who have little background in piano. The class studies in the electronic piano laboratory, which makes it possible to provide individual instruction in a class situation.

MUS 135 MUSIC AND METHODS IN EARLY CHILDHOOD **WS 3 hrs.**
Designed for students who will be working with preschoolers, kindergarten, and elementary students. Through the creative process students will develop simple tunes, knowledge and appreciation of music. A part of the course will be the creating of musical instruments from simple objects.

MUS 137, 138, 139 VOICE CLASS **FWS 2 hrs.**
The fundamentals of singing are studied, including vocal tone, breath control, phrasing, range and diction. Standard song literature is studied. Open to all students.

MUS 167, 168, 169 CONDUCTING **FWS 2 hrs.**
An introductory study of conducting: Choir (fall), Band (winter), Orchestra (spring).

MUS 214, 215, 216 ADVANCED THEORY **FWS 3 hrs.**

MUS 251, 252, 253 MUSIC THEATRE **FWS 2 hrs.**
A workshop class offering practical experience in selection, staging, and performance of music literature ranging from melodrama to opera, including production of a musico-dramatic show for public performance. Prerequisite: Permission of instructor.

MUS 310, 311, 312 COMPREHENSIVE MUSICIANSHIP **FWS 3 hrs.**
Class assignments in the areas of analysis, conducting, counterpoint, arranging, orchestration as decided by the student and instructor.

MUS 324, 325, 326 HISTORY OF MUSIC LITERATURE AND STYLES **FWS 3 hrs.**
Includes an in-depth study of the literature and styles of music. Ancient, Medieval, and Renaissance music are covered during the fall, Baroque and Classic periods during the winter, Romantic and Modern music during the spring. The course work is geared to the visual and performing arts major; however, any student with sufficient background may take the course.

MUS 343, 344, 345 JAZZ HISTORY **FWS 3 hrs.**
Evolution of the historical and stylistic aspects of rock and jazz music. Particular emphasis is placed on performers and titles. A text is utilized in conjunction with tapes and records. Film strips and guest lecturers augment the presentation.

MUS 351, 352, 353 MUSIC THEATRE **FWS 2 hrs.**
See MUS 251, 252, 253.

MUS 367, 368, 369 INTERMEDIATE CONDUCTING **FWS 3 hrs.**
In-depth continuation of MUS 167, 168, 169.

MUS 446, 447, 448 INDEPENDENT STUDY **FWS 3-5 hrs.**
Independent research or project in the student's strength area to be decided by instructor and student.

MUS 451, 452, 453 MUSIC THEATRE **FWS 2 hrs.**
See MUS 251, 252, 253.

MUS 467, 468, 469 ADVANCED CONDUCTING **FWS 3 hrs.**
Concentrated effort in development of performance, score mastering, rehearsal and performance techniques. Continuation of MUS 367, 368, 369.

Ensembles

PERF 110, 120, 130; 210, 220, 230; 310, 320, 330; 410, 420, 430
JAZZ ENSEMBLE **FWS 1 hr.**
By audition only. Preference is given to participating members of Marching Band in the fall and Concert Band in winter and spring. The initial stages of the band's development include studying and playing dance band repertoire, practical performances and jazz improvisation. The group performs several concerts on campus each year, plays for area dances, and makes a concert tour in the spring.

PERF 131, 231, 331, 431 STADIUM BAND **F 2 hrs.**
Open to all students regardless of major. The Stadium Band performs at all home football games. The main function of the group is to provide music for the Stepperettes and appropriate music in the stands. Stadium Band may be taken for two hours credit or as a substitute for one hour of physical education credit. Rehearses at 12 noon daily during marching season.

PERF 132, 133; 232, 233; 332, 333; 432, 433 SYMPHONIC BAND **WS 1 hr.**
Open to all students, regardless of major, who demonstrate sufficient ability to study, rehearse, and present advanced forms of wind ensemble literature. The group presents formal concerts on campus as well as in local high schools. Occasionally guest conductors and nationally known soloists perform with the group.

PERF 137, 138, 139; 237, 238, 239; 337, 338, 339; 437, 438, 439
INSTRUMENTAL ENSEMBLE **FWS 1 hr.**
Groups are organized upon the basis of talents and interests of the members. These groups may consist of various combinations of woodwind, string, brass, and percussion instruments.

PERF 140, 240, 340, 440 PEP BAND **W 1 hr.**
Membership is open to any student, based upon ability and instrumentation. The group performs at all home basketball games. Repertoire includes pop, jazz, and rock tunes. Rehearses two hours per week during basketball season. The group may accompany the basketball team out of town when need and finances permit.

PERF 141, 142, 143; 241, 242, 243; 341, 342, 343; 441, 442, 443
SYMPHONY ORCHESTRA **FWS 1 hr.**
The Mesa College Civic Symphony Orchestra draws its personnel from the professional, amateur, and student musicians of Grand Junction and other Western Colorado communities. At least three concerts are presented during the school year. Nationally known musicians appear with the orchestra as guest soloists. Admission by special permission of the conductor.
The Mesa College Civic Symphony Orchestra meets on campus two hours on Tuesday evenings. The Valley Symphony, also sponsored by Mesa College, meets at Delta High School two hours each Thursday evening and also presents three concerts yearly.

PERF 144, 145, 146; 244, 245, 246; 344, 345, 346; 444, 445, 446
VOCAL ENSEMBLE **FWS 1 hr.**
Vocal ensembles include men's and women's trios, quartets, double quartet, etc. Groups are organized according to the talents and interests of the students.

PERF 147, 148, 149; 247, 248, 249; 347, 348, 349; 447, 448, 449
COLLEGE CHOIR **FWS 1 hr.**
Open to all men and women who wish to sing the best in all styles of choir literature. This group performs several concerts, and membership is necessary to be eligible for the Modern Choir.

PERF 151, 152, 153; 251, 252, 253 PIANO ACCOMPANYING **FWS 1 hr.**
A course designed for giving piano majors actual experience in supervised accompanying.

PERF 154, 155, 156; 254, 255, 256; 354, 355, 356; 454, 455, 456
CLARINET ENSEMBLE **FWS 1 hr.**
The clarinet group is composed of interested clarinet players who desire an outlet to rehearse and perform clarinet literature.

PERF 157, 158, 159; 257, 258, 259; 357, 358, 359; 457, 458, 459
COMMUNITY CHOIR **FWS 1 hr.**
Open to college faculty, students, and community members; performs with the community orchestra. Outstanding opportunity to sing the world's greatest music.

PERF 160, 161, 162; 260, 261, 262; 360, 361, 362; 460, 461, 462
DANCE BAND **FWS 1 hr.**
Dance Band consists of a select instrumentation of vocal and instrumental students who devote rehearsal time to standard pop, rock, and jazz tunes. Many area dances are performed during the year for various community organizations, service clubs, and schools.

PERF 165, 166, 167; 265, 266, 267; 365, 366, 367; 465, 466, 467
RECORDER ENSEMBLE **FWS 1 hr.**
A fundamental approach is used in teaching students to obtain proficiency on the Baroque recorder. Literature from all eras is utilized after basic skills are obtained.

PERF 168, 169, 170 BEGINNING JAZZ IMPROVISATION **FWS 1 hr.**
Instrumentalists learn basic techniques of performing rock and jazz solos. A modal and scalewise approach is utilized in achieving these basic concepts. Performing knowledge of major and minor scales on the individual instrument is a prerequisite.

PERF 171, 172, 173; 271, 272, 273; 371, 372, 373; 471, 472, 473
MODERN CHOIR **FWS 1 hr.**
A performing group that sings Broadway show tunes, jazz and popular music for both campus and community audiences. Auditions are held for membership.

PERF 181, 182, 183; 281, 282, 283; 381, 382, 383; 481, 482, 483
STEPPERETTES **FWS 1 hr.**
A dance/drill group which performs for football and basketball games and for community organizations. Girls are selected on a tryout basis. Open to all college women. One hour of credit may be substituted for physical education requirement during the fall quarter.

PERF 368, 369, 370 ADVANCED IMPROVISATION **FWS 1 hr.**
Emphasis is placed on learning riffs, figures, and sequences as they are utilized in various chord structures. Most of the tunes utilized involve altered chords and substitute chords. Beginning improvisation is a prerequisite or special permission of the instructor.

PERF 384, 385, 386; 484, 485, 486 COMBO **FWS 1 hr.**
Interested individuals team up with a rhythm section in learning tunes and "head" charts. Various combinations of instrumentalists and vocalists find this class the best medium for improving performing skills and making practical application of improvisation techniques.

Applied Music

Individual music lessons are given in piano, voice, and most of the orchestral and band instruments. The fee, determined by the Outreach Program is $40.00 per quarter which entitles the student to one lesson a week per quarter. All applied music fees are to be paid at the time of registration.

The number of hours credit in applied music is to be determined for each student by the music staff. Those who register for one lesson per week may receive two hours credit; four-hours credit will be granted by special permission of the music staff only.

Visual and Performing Arts majors and students performing in a major musical group (such as orchestra, band, and choir) are eligible for scholarship consideration to assist them in meeting the costs of applied lesson fees. Inquiries are to be directed to the Music Department.

AMUS 111, 112, 113; 211, 212, 213; 311, 312, 313; 411, 412, 413 **VOICE** **FWS 2, 4 hrs.**
AMUS 114, 115, 116; 214, 215, 216; 314, 315, 316; 414, 415, 416 **PIANO** **FWS 2, 4 hrs.**
AMUS 117, 118, 119; 217, 218, 219; 317, 318, 319; 417, 418, 419
ORGAN **FWS 2, 4 hrs.**
AMUS 121, 122, 123; 221, 222, 223; 321, 322, 323; 421, 422, 423
VIOLIN **FWS 2, 4 hrs.**
AMUS 124, 125, 126; 224, 225, 226; 324, 325, 326; 424, 425, 426 **CELLO** **FWS 2, 4 hrs.**
AMUS 127, 128, 129; 227, 228, 229; 327, 328, 329; 427, 428, 429 **BASS** **FWS 2, 4 hrs.**
AMUS 130, 131, 132; 230, 231, 232; 330, 331, 332; 430, 431, 432
GUITAR **FWS 2, 4 hrs.**
AMUS 133, 134, 135; 233, 234, 235; 333, 334, 335; 433, 434, 435
TRUMPET **FWS 2, 4 hrs.**
AMUS 136, 137, 138; 236, 237, 238; 336, 337, 338; 436, 437, 438
TROMBONE **FWS 2, 4 hrs.**
AMUS 139, 140, 141; 239, 240, 241; 339, 340, 341; 439, 440, 441
FRENCH HORN **FWS 2, 4 hrs.**
AMUS 142, 143, 144; 242, 243, 244; 342, 343, 344; 442, 443, 444 **TUBA** **FWS 2, 4 hrs.**
AMUS 145, 146, 147; 245, 246, 247; 345, 346, 347; 445, 446, 447
CLARINET **FWS 2, 4 hrs.**

AMUS 148, 149, 150; 248, 249, 250; 348, 349, 350; 448, 449, 450	**OBOE**	**FWS**	**2, 4 hrs.**
AMUS 151, 152, 153; 251, 252, 253; 351, 352, 353; 451, 452, 453	**FLUTE**	**FWS**	**2, 4 hrs.**
AMUS 154, 155, 156; 254, 255, 256; 354, 355, 356; 454, 455, 456 PERCUSSION		**FWS**	**2, 4 hrs.**

Division of Humanities

The Division of Humanities endeavors to promote in students cultural awareness, critical judgment, and facility in the use of language. Students are encouraged to understand, to evaluate, to appreciate, and to participate in the various forms of man's expression. With these objectives in view, students should develop enduring values, both aesthetic and utilitarian.

Dan M. Showalter, Division Chairman

Berkey, Boschi, P. Carmichael, Djos, Edmonds, Frohock, Gallegos, Hoffer, R. Johnson, Lay, Don MacKendrick, Mountain, Pilkenton, M. Robinson, W. Robinson (Head, Speech and Drama Department), Sowada, Spelman, M. S. Sullivan, Tharoud, Zeigel.

ASSOCIATE IN ARTS TRANSFER PROGRAM

Students whose major interest is in one of the areas included in the Division of Humanities may work toward the Associate in Arts degree by following the General Education or General Liberal Arts curriculum described elsewhere in this catalog. These programs, subject to certain alternatives that may be suggested by the student's adviser, will serve as the basis for transfer to another college or university that offers upper-division work not currently available at Mesa College.

BACHELOR OF ARTS IN LIBERAL STUDIES

The Liberal Studies Program is a new academic concept providing an opportunity for students, in consultation with a special faculty committee, to design much of their own major program. The area requirements permit each individual to be exposed to a variety of academic or occupational disciplines; at the same time the student has considerable freedom in selecting courses to meet specific requirements. The plan also allows the student greater flexibility in selecting a supporting program of transdisciplinary study.

This degree program is designed for the student of maturity and responsibility whose interests may cross several disciplines. Although the required courses and area requirements help assure basic academic credentials, there is much opportunity for flexibility. The special project during the student's final year of baccalaureate-degree work offers broad opportunity for off-campus experiences related to a particular area of interest, or the student may engage in approved on-campus study, research or performance, depending upon individual interests.

Students transferring from other institutions or from occupationally oriented programs may find the Liberal Studies plan accommodating to a wide range of academic pursuits.

Broad Requirements for B.A. in Liberal Studies

1. Successful completion of 186 quarter hours of credit.
2. Successful completion of a senior/equivalent comprehensive.

Special Requirements for the 186 Quarter Hours of Credit

1. Forty-five credit hours in general education.
2. Ninety-one credit hours in specific areas: fine arts, 25; humanities, 25; social science, 25; mathematics, 5; physical or biological science, 5; physical education and recreation, 6.
3. Fifty hours of electives, which may be chosen from any of the following: accounting, agriculture, art, biology, business, chemistry, data processing, drama, economics, education, English, French, geology, German, history, home economics, literature, mathematics, music, occupational studies, philosophy, physical education, physics, political science, psychology, religion, sociology, social work, secretarial, Spanish, speech, technical.

Lower and Upper Division Requirements

Each student enrolled in the Liberal Studies Program will be required to complete:

1. Ninety-three hours of credit in lower-division courses.
2. Forty-five hours of credit in upper-division courses (numbered in the 300's and 400's).

Elective credit hours to complete the baccalaureate-degree requirements may be taken in the area of the student's own choice.

General Implementation by Candidate for B.A. Degree in Liberal Studies

A student entering the Liberal Studies Program must submit a major program for approval of an elected or appointed board composed of at least one faculty member from each academic division and the Occupational Studies area. This faculty board will then permit the student to select one member from the faculty board, two instructors from the major field of concentration, and one instructor from a minor or related field of concentration to advise and assist in developing the program. This program may be submitted any time prior to the student's senior/equivalent year. The committee selected by the student will then assist the student in having the program approved by the faculty board.

Education

The EDUC 121, 122, 123 sequence offers the college student a comprehensive study of literature for children from their earliest association with stories and books through their elementary, junior high, and high school years until they have made the transition to adult reading. These courses do not meet the literature requirement for general education or for B.A. degree programs.

EDUC 121 CHILDREN'S LITERATURE (Primary, K-3) **FS 3 hrs.**
A course designed to give those who are interested in literature for children an opportunity to survey the best books, reading and evaluating books for K-3 grade.

EDUC 122 CHILDREN'S LITERATURE (INTERMEDIATE) **W 3 hrs.**
Reading and evaluation of books for intermediate grades (4-6), information about children's books, children's interests in reading, important authors and illustrators, and problems in the guidance of reading.

EDUC 123 LITERATURE FOR THE ADOLESCENT **S 3 hrs.**
Reading and evaluation of books for junior and senior high school students.

EDUC 251 INTRODUCTION TO EDUCATION **FWS 3 hrs.**
A short survey of the field of education. Important aspects considered are: History of American Education, present philosophies of education, major problems of education, present practices, and the school as a social institution. Required of education majors. Open to freshmen with permission of instructor.

EDUC 252 INTRODUCTION TO THE CLASSROOM **FWS 3 hrs.**
The general purpose of this course is to expose the student to the actual experiences which may take place in future employment as an educator. Objectives include: understanding role as a part of an educational team; developing professional methods in working with students and school problems; participating in classroom situations; opportunity for student to be of service to others; greater opportunity for self-understanding; to relate past, present, and future educational experiences; to help develop interpersonal relationship; to help student to take advantage of community resources; and to provide student with experiences as a teacher aid. Prerequisite: EDUC 251.

EDUC 253 TEACHER AIDE SKILLS **WS 3 hrs.**
This is primarily a laboratory course for prospective elementary teachers and persons who wish to become teacher aides for elementary grades. The course includes basic skills in library practice, practice in use of audio-visual equipment, reading materials, and laboratory equipment, duplicating machines, modern mathematics terminology, and creative projects to reinforce learning. Permission to register must be secured from instructor.

English

ENGL 101, 102, 103 ENGLISH SKILLS (*Modular concept) **FWS 1 hr.**

These modules are designed for students who qualify for regular English composition through their ACT scores but who have specific deficiencies in one or more of the basic skills covered in the following:

Module 1 (ENGL 101): Basic Grammar (parts of speech and function).
Module 2 (ENGL 102): The Sentence (structure, kinds, clauses and phrases).
Module 3 (ENGL 103): Punctuation.

ENGL 110 ENGLISH GRAMMAR **FWS 3 hrs.**

A review of functional grammar and usage as well as sentence structure and mechanics. The department recommends that students whose scores are low on the American College Test take ENGL 110 before ENGL 111. Credit counts as elective for a degree.

ENGL 111, 112, 113 ENGLISH COMPOSITION **FWS 3 hrs.**

The primary objective of this course is to develop the ability to write well-organized paragraphs and essays. History of the language and vocabulary are given attention. The first quarter stresses informal writing; the second quarter stresses formal writing, including a research paper; the third quarter consists of the study of at least one novel and some other types of literature as well as some critical writing. The three quarters must be taken in sequence.

ENGL 115 TECHNICAL REPORT WRITING **S 3 hrs.**

This course is designed to assist potential scientists, technologists, vocational technological specialists, and nurses to describe scientific processes in clear, correct language; to construct scientific statements with logic and clarity and to be able to present them orally or in writing; to write complex business letters; to draft agreements, contracts, and research proposals with accuracy. A permitted substitute for ENGL 113 for certain students.

ENGL 117 VOCATIONAL COMMUNICATIONS I **F 3 hrs.**

This course is specifically designed for the immediate needs of a vocational-career student. The primary purpose is to teach the basic sentence structure for clarity in thinking and writing. A structural and modern approach to grammatical analysis is used. Spelling and vocabulary of shop-related terminology is also studied.

ENGL 118 VOCATIONAL COMMUNICATIONS II **W 3 hrs.**

Emphasizing relevant needs of written vocational communications, this course will include basic descriptions, progress reports, shop analyses, inter-office memos, business letters, job resumes, and related research procedures. Study of spelling and vocabulary will be continued.

ENGL 119 VOCATIONAL COMMUNICATIONS III **S 3 hrs.**

Emphasis in this phase of the sequence course is on oral communications and the development of a fundamental appreciation of literary works.

ENGL 121 ENGLISH: SPELLING **FWS 3 hrs.**

A course designed primarily to assist the student in overcoming spelling difficulties. Attention is also given to pronunciation, meaning, and usage. Does not count toward English composition requirement.

ENGL 122 ENGLISH: VOCABULARY **FWS 3 hrs.**

This course emphasizes vocabulary improvement by means of word analysis and study of contributions from other languages. English 121 is not a prerequisite. This course is also recommended for reading improvement. Does not count toward English composition requirement.

ENGL 126, 127 HONORS ENGLISH **FW 4½ hrs.**

Designed for students whose high school records and ACT scores are in the 85th percentile or higher. The first quarter concentrates on sentence-structure errors, patterns of organization including the outline, panel discussions on man and woman in contemporary society, and the impact of scientific thought on the humanities. Critical reviews and a short thesis required. The second quarter is devoted to a longer research paper and an essay involving a critical analysis of a novel.

ENGL 131, 132, 133 INTRODUCTION TO JOURNALISM **FWS 3 hrs.**

A survey course in journalism including fundamentals in news and feature writing, advertising and business operations, study of outstanding newspapers, copyreading and proofreading techniques, newspaper layout, radio writing, and history of journalism. The course also includes some work in magazine writing and writing markets.

ENGL 231 JOURNALISM: REPORTING **F 3 hrs.**

Fundamentals of news gathering and writing. Prerequisite: ENGL 131 or permission of instructor.

**Classes for each module meet in extended periods three times each week for three weeks. The credit earned is elective and does not substitute for ENGL 111, 112, 113, 115 or any other present or subsequent Humanities requirement.*

ENGL 232 JOURNALISM: BROADCAST NEWS WRITING **W 3 hrs.**
Techniques and practice in preparation of news for broadcasting. Prerequisite: ENGL 231 or permission of instructor.

ENGL 233 JOURNALISM: PUBLIC RELATIONS **S 3 hrs.**
Analysis and practice with public relations media. Prerequisite: ENGL 232 or permission of instructor.

ENGL 251, 252, 253 CREATIVE WRITING **FWS 3 hrs.**
The student is directed in practice to develop ease in written expression. The fall-quarter course focuses on development of sensory awareness through production of short pieces which demonstrate parts of the fiction narrative. The winter quarter offers an opportunity to analyze and write the short story. Spring-quarter study deals with the poetry of the language as applied to both long and short works, with attention to stylistic characteristics such as psycho-linguistics, rhythm, and sentence pattern.

ENGL 311 SEMINAR: ADVANCED WRITING **F 3 hrs.**
Focuses study on formula required for magazine, expository, and play writing. Prerequisite: ENGL 111, 112, 113.

ENGL 312 SEMINAR: ADVANCED WRITING **W 3 hrs.**
A continuation of ENGL 311 through work on a different project. Prerequisite: ENGL 311.

ENGL 322 ADVANCED VOCABULARY **FWS 3 hrs.**
Designed to help upper-division students broaden working vocabulary through usage in sentence structure, readings from scholarly and professional journals, and specific study in areas such as law, medicine, music, art, literature, and science.

ENGL 331, 332, 333 PUBLICATIONS PRACTICUM **FWS 1 hr.**
Experience with campus publications under faculty supervision. Prerequisites: ENGL 131, 132, 133.

ENGL 421 SEMINAR: HISTORY OF LITERARY CRITICISM **F 3 hrs.**
A survey of the development of literary criticism from the classical period through the nineteenth century. Helps students in liberal studies develop a knowledge of relationship between criticism and tradition and invention in the developing art and substance of western literature. Open to upper-division students who have completed at least nine quarters of literature.

ENGL 422 SEMINAR: HISTORY OF LITERARY CRITICISM **W 3 hrs.**
Continuation of ENGL 421.

ENGL 423 SEMINAR: FORCES IN CONTEMPORARY CRITICISM **S 3 hrs.**
A study of major twentieth century critics and critical theories. Prerequisite: ENGL 422 or consent of instructor.

ENGL 431, 432, 433 PUBLICATIONS PRACTICUM **FWS 1 hr.**
Experience with campus publications under faculty supervision. Prerequisites: ENGL 231, 232, 233.

Foreign Language

Since some programs require two years of a foreign language, the department recommends that students begin their study of a foreign language during the freshman year to help insure continuity of study as an undergraduate at Mesa College. The department operates a laboratory containing fifteen dual-track recorders. Students practice individually with tapes recorded by native speakers.

FRENCH

FR 111, 112, 113 FIRST-YEAR FRENCH **FWS 5 hrs.**
This beginning course is an introduction to the French language and culture through the use of a culturally oriented text. All four language skills are developed and stressed at the beginning and continued throughout the year.

FR 251, 252, 253 SECOND-YEAR FRENCH **FWS 3 hrs.**
Includes grammar review; vocabulary distinctions; reading of cultural, historical, and short literary selections; discussion; guided and free conversation; aural comprehension. Prerequisites: two years of high school French, one year of college French, or permission of instructor.

GERMAN

GERM 111, 112, 113 FIRST YEAR GERMAN **FWS 5 hrs.**
A three quarter sequence designed to develop basic skill in the understanding, speaking, reading, and writing of German. Initial emphasis is given to the development of the skills of understanding and speaking. As the program advances, emphasis is also given to the skills of reading and writing.

GERM 251, 252, 253 READING AND SPEAKING GERMAN **FWS 3 hrs.**
Reading of cultural material, magazine articles, and short literary selections. Discussion, guided and free conversation. Vocabulary. Aural comprehension. Prerequisite: Two years of high school German, one year of college German, or permission of the instructor.

GERM 261 INDEPENDENT STUDY **FWS 1-3 hrs.**
Offered on demand and in consultation with instructor.

GERM 262 INDEPENDENT STUDY **FWS 1-3 hrs.**
Offered on demand and in consultation with instructor.

ITALIAN

ITAL 110 CONVERSATIONAL ITALIAN **FWS 3 hrs.**
This is an introductory course in which the student learns correct pronunciation, language patterns, and practical vocabulary through constant oral practice. Material from Italian culture and life style is specially selected to aid students planning to travel. This course is recommended for music majors. No prerequisite.

SPANISH

SPAN 111, 112, 113 FIRST-YEAR SPANISH **FWS 5 hrs.**
This three-quarter sequence course is offered in the day school for students with no prior knowledge of Spanish whose major fields have a foreign-language requirement; also for all other students who are interested in a comprehensive, transfer-type program designed to develop basic competency in all four areas of language skills: understanding, speaking, reading and writing.

SPAN 114, 115, 116 CONVERSATIONAL SPANISH **FWS 3 hrs.**
This semi-individualized three-quarter sequence (Beginning, Intermediate, and Advanced) is for English-speaking persons who come into daily contact with Spanish-speaking individuals, either socially or in their occupations. The class helps develop pronunciation, vocabulary, and a good foundation for future mastery of Spanish-speaking skills. (Offered at night through the Office of Continuing Education.)

SPAN 117, 118, 119 CAREER SPANISH **FWS 3 hrs.**
This limited-objective course (understanding and speaking skills only) is offered in the day school for students with or without prior knowledge of Spanish who have limited number of elective hours or are interested in only a specific aspect of Spanish. Course options include medical, urban, agricultural, and tourist Spanish. Students may begin the course in any quarter and may take it for one, two, or three quarters.

SPAN 251, 252, 253 READING AND SPEAKING SPANISH **FWS 3 hrs.**
Reading of cultural material, magazine articles, and short literary selections. Discussion, guided and free conversation. Vocabulary. Aural comprehension. Prerequisite: Two years of high school Spanish, one year of college Spanish, or permission of the instructor.

Literature

LIT 131, 132, 133 WORLD LITERATURE **FWS 3 hrs.**
The student is introduced to representative literary figures of the world, to major types and forms of literary classics, and to their cultural backgrounds. British and American writers are not included because of their availability in other courses offered. Works studied include Homer, the Bible, Sophocles, Dante, Cervantes, Goethe, Moliere, Pushkin and others.

LIT 134 MYTHOLOGY (Classical) **FS 3 hrs.**
This is a one-quarter course offered to acquaint the student with the basic stories of Greek and Roman mythology which have been quoted so universally that a knowledge of them is essential to literary appreciation. Open to freshmen and sophomores. Offered Fall and Spring quarters.

LIT 135 MYTHOLOGY (Medieval) **W 3 hrs.**
This is a one-quarter course in Norse, Oriental, and Medieval Mythology. It aims to acquaint the student with the early cultures of other races as well as some of the famous stories of medieval Europe upon which many of our masterpieces of literature are based. Open to freshmen and sophomores. Offered Winter Quarter and on demand.

LIT 141 INTRODUCTION TO LITERATURE—FICTION **FWS 3 hrs.**
This study of short stories, novels, and plays by American, English and European authors of the nineteenth and twentieth centuries helps broaden the student's knowledge of some of the world's best fiction and acquaints the student with critical techniques in order that the student may form a basis for independent evaluation.

LIT 142 INTRODUCTION TO LITERATURE—POETRY **FW 3 hrs.**
This course is planned to develop the student's understanding and appreciation of English and American poetry. The class analyzes poems as to form and philosophy and later the individual student engages in evaluation of representative poetry. Open to freshmen and sophomores.

LIT 143 INTRODUCTION TO LITERATURE—DRAMA **S 3 hrs.**
Introduction to dramatic literature. Emphasis on structure, content, plot, and theme.

LIT 144 INTRODUCTION TO LITERATURE—BIOGRAPHY **S 3 hrs.**
Representative writings in biography, autobiography, and biographical fiction serve to acquaint the student with the development and place in literature of these three literary types. The course aims to develop in the student some critical appreciation of biography as an art form. Open to freshmen and sophomores.

LIT 145 INTRODUCTION TO ORIENTAL LITERATURE **S 3 hrs.**
A survey of the literature of Asia, including the Near East, Middle East, and Far East. This course includes some of the great religious literature of the Orient, as well as poetry, prose, and drama.

LIT 146 INTRODUCTION TO AFRO-AMERICAN LITERATURE **S 3 hrs.**
This is a survey of American Literature as represented by the best known and most talented Afro-American authors of the nineteenth and twentieth centuries. Writers are selected on the basis of literary merit rather than on their political or social prominence. Among others, works by W.E.B. DuBois, Langston Hughes, James Baldwin, LeRoi Jones, Eldridge Cleaver, Paul L. Dunbar, and James Wright are included in this course.

LIT 251, 252, 253 SURVEY OF ENGLISH LITERATURE **FWS 3 hrs.**
A course in the development of English poetry and prose from Beowulf to the present. The literature is presented against its political and social backgrounds. This course is designed to meet the requirements of those planning to major in English literature. Prerequisite: ENGL 112.

LIT 254 INTRODUCTION TO SHAKESPEARE **WS 3 hrs.**
This course provides an opportunity for students to be introduced to one of the world's greatest literary artists. His works are prominent in all literature, and his influence on the works of other artists in many fields of the humanities is a unifying discipline for literature courses. The course will cover five or six of Shakespeare's plays, from his earliest works to his latest, to show his growth and development as a dramatist. Prerequisite: ENGL 111, 112, 113.

LIT 261, 262, 263 UNITED STATES LITERATURE **FWS 3 hrs.**
This course consisting of three quarters presents the development of American prose and poetry from the seventeenth century to the present. It aims to develop appreciation of literature and to increase the student's understanding of America as it is today through knowledge of the thought and culture of the past. Credit will be given for any single quarter. Prerequisite: ENGL 112.

LIT 316 DEVELOPMENT OF AMERICAN NOVEL I **F 3 hrs.**
Beginning to 1900.

LIT 317 DEVELOPMENT OF AMERICAN NOVEL II **W 3 hrs.**
1900 to present.

LIT 318 FRONTIER AMERICAN LITERATURE **S 3 hrs.**
Regional literature of U.S. frontier. Prerequisite: LIT 261, 262, 263.

LIT 322 THE BIBLE AS LITERATURE **S 3 hrs.**
Survey of literary achievements, as represented by the King James Bible—Old and New Testaments.

LIT 324 SHORT STORY I **F 3 hrs.**
Introduces the genre of the short story; provides the history and examples of short stories which reveal the development of plot, setting, character, symbol, point of view, and theme.

LIT 325 SHORT STORY II **W 3 hrs.**
Continuation of LIT 324. Covers short stories which are more difficult in analyzation and which reveal the development of irony, allegory, humor, satire, and fantasy.

***LIT 326 WORLD DRAMA I** **F 3 hrs.**
Survey of drama beginning with Greek drama through the Elizabethan. (Offered alternate years.)

**May count for either Humanities or Fine Arts requirement for the Bachelor of Arts degree in Liberal Arts.*

***LIT 327 WORLD DRAMA II** W 3 hrs.
Continuation of LIT 326, Jacobean and Restoration to Ibsen. (Offered alternate years.)

***LIT 328 WORLD DRAMA III** S 3 hrs.
Continuation of LIT 326, 327. Ibsen to present. (Offered alternate years.)

LIT 330 WOMEN IN WORLD THOUGHT AND LITERATURE WS 3 hrs.
A one quarter course delving into the contributions of women to politics, philosophy, literature, art, drama, and the advancement of cultural and humanitarian concepts.

LIT 331 WOMEN IN WORLD THOUGHT AND LITERATURE S 3 hrs.
Continuation of LIT 330.

LIT 345 LITERATURE OF THE MEXICAN-AMERICAN 3 hrs.
Emphasis on the universal themes of Mexican-American poetry, drama, and fiction as related to two distinct cultures: Hispanic and Indian, of which the Chicano is a composite. (Offered every two years on an alternate-quarter basis.)

LIT 350 CHAUCER 3 hrs.
The language and background of the Chaucerian period in English literature. (Offered every two years on an alternate-quarter basis.)

LIT 360 MILTON 3 hrs.
Survey of thought and poetry of John Milton in relation to politics, religion, philosophy, and society of 17th Century England. (Offered every two years on an alternate-quarter basis.)

LIT 410 BRITISH NOVEL 3 hrs.
Development of the British novel as a sophisticated literary genre. (Offered every two years on an alternate-quarter basis.)

LIT 411 AMERICAN DRAMA I F 3 hrs.
From beginning to O'Neill. (Offered alternate years.)

LIT 412 AMERICAN DRAMA II W 3 hrs.
From O'Neill to present. (Offered alternate years.)

***LIT 413 CONTEMPORARY DRAMA** S 3 hrs.
This course is concerned with the recent developments of the realistic and absurd playwrights.

LIT 415 TOPICS IN AMERICAN LITERATURE: AMERICAN FOLKLORE W 3 hrs.
Tracing the development of the American folklore genre as a literary art form.

LIT 416 CONTEMPORARY AMERICAN POETRY S 3 hrs.
Survey of contemporary American poets since 1940. Course assumes student has a basic understanding of literary terminology. Poets to be read and discussed include James Merrill, Adrienne Rich, James Dickey, Sylvia Plath, Allen Ginsberg, Theodore Roethke, Robert Lowell and John Berrymon.

LIT 424 LITERATURE AND SCIENCE IN THE MODERN AGE W 3 hrs.
A study of literature in traditional and emerging relations with science which affect the fine arts, social thought, and value theory. This course fulfills the literature requirement for the Bachelor of Science degree.

LIT 430 ADVANCED SHAKESPEARE WS 3 hrs.
Development of Shakespeare's art as a dramatist.

LIT 435 SEVENTEENTH CENTURY POETRY AND PROSE 3 hrs.
Survey of major poetry and prose excluding the major works of Milton. (Offered every two years on an alternate-quarter basis.)

LIT 440 CLASSICAL LITERATURE IN TRANSLATION: THE GREEK TRADITION W 3 hrs.
Readings in English of outstanding Greek authors. Major classical genres emphasizing the development of comedy, tragedy, lyric poetry against the background of history, philosophy, and religion.

LIT 441 CLASSICAL LITERATURE IN TRANSLATION: THE LATIN TRADITION S 3 hrs.
Works by Virgil, Ovid, Lucretius, Petronius, Terence, and Plautus in English translation are considered in the light of the humane and religious traditions of Europe.

Philosophy

PHIL 251 HISTORY OF PHILOSOPHY FWS 3 hrs.
Greek and medieval philosophy; foundations of Greek thought; pre-Socratic philosophers; Socrates, Plato, Aristotle; Stoic, Cynic and Epicurean schools; Plotinus, Boethius, St. Augustine, St. Anselm, St. Thomas Aquinas. Problems of metaphysics, ethics, epistemology, aesthetics, cosmology, religion, politics and science. No prerequisite required. May be taken by permission of instructor.

PHIL 252 HISTORY OF PHILOSOPHY **WS 3 hrs.**
Continuation of PHIL 251. Machiavelli, Luther, Calvin, Erasmus, Copernicus, Galileo; Hobbes, Descartes, Spinoza, Locke, Berkeley, Hume, Kant, Rousseau, Hegel, Schopenhauer, Nietzsche, James. No prerequisite. May be taken by permission of instructor.

PHIL 351 PHILOSOPHY: AESTHETICS **S 3 hrs.**
Examination of classical and contemporary theories of art forms by such writers as Plato, Aristotle, Tolstoy, Santayana, and Hegel; a study of these principal historical systems in interpretation and criticism of works in fine arts, music, and literature. No prerequisite: May be taken by permission of instructor. Note: Students desiring to work toward a baccalaureate major or minor in philosophy should take PHIL 251, 252, and 351.

Reading

READ 110 COLLEGE STUDY SKILLS AND READING **FWS 3 hrs.**
Emphasis is placed on study skills necessary for success in college. A personalized approach to reading is used to develop vocabulary, comprehension, and concentration. Especially designed for students who have been out of school for some time or who have had problems with study skills in high school.

READ 113 READING IMPROVEMENT **FWS 3 hrs.**
This developmental reading course stresses vocabulary, comprehension, and flexibility of rate. Two hours of structured classwork and one hour of skills practice in the Reading Center each week permit students to advance at their own speed.

Speech

SPCH 101 COMMUNICATIONS **FWS 3 hrs.**
A course in interpersonal communication which is concerned with language, listening, response, defense of statement and/or non-verbal communication between two or more people.

SPCH 102 SPEECH MAKING **FWS 3 hrs.**
The development of the individual in physical effectiveness, vocal effectiveness, and knowledge of the preparation and organization of the speech. The course is designed to improve the student's ability to present himself before an audience in a speech situation.

SPCH 103 ADVANCED SPEECH MAKING **S 3 hrs.**
Trains the student in panels, interviews, persuasion, informative, after-dinner speaking, and situation speeches encountered in community living. Open to any student who has completed SPCH 102 or by consent of instructor.

SPCH 111 INTRODUCTION TO SPEECH PATHOLOGY **F 3 hrs.**
An introductory course for students interested in exploring the field of speech pathology and audiology. The student will be introduced to the disorders of speech and audiology.

SPCH 112 VOICE AND DICTION **W 3 hrs.**
A study of the development and use of the speaking voice with emphasis on voice placement, speech sounds and the phonetic alphabet.

SPCH 113 VOICE AND ARTICULATION DISORDERS **S 3 hrs.**
Provides an introduction to anatomy of head, neck and trunk and a thorough analysis of the nature, causes and treatment of articulation and voice disorders.

SPCH 121 INTRODUCTION TO BROADCASTING **F 3 hrs.**
An introductory course concerned with the broadcasting medium, its impact on society, history and basic techniques.

SPCH 122 PREPARATION FOR PRODUCTION **W 3 hrs.**
A basic preparatory course in production for radio and television broadcasting.

SPCH 123 PRODUCTION **S 3 hrs.**
A practical course in production using the information and techniques learned in SPCH 122. Open to students who have completed SPCH 122 or consent of instructor.

SPCH 131, 132 FUNDAMENTALS OF ARGUMENTATION **FW 3 hrs.**
A study of the basic qualities, requirements, and use of logic and ethics in any form of persuasion with an emphasis on persuasion in controversy. The basic structure of debate in all its forms is studied.

SPCH 144, 145, 146 PROBLEMS IN SPEECH **FWS 1 hr.**
An independent-study course which includes special problems and work in speech or speech-related activities. Designed to encourage the development of proficiency through speech activity, the course allows the student to earn one hour of credit each quarter with the possiblity of earning 12 hours by completing the sequence.

SPCH 211 BASIC AUDIOLOGY **F 3 hrs.**
Provides an introduction to the anatomy of the hearing mechanism; the psycho-acoustics of sound and perception; and the identification, diagnosis, and rehabilitation of the acoustically impaired.

SPCH 212 PHONETICS **W 3 hrs.**
Introduces basic physiological and acoustical phonetic theory, familiarizes the student with the International Phonetic Alphabet, and provides a working knowledge of phonetic transcription.

SPCH 231, 232 FIRST-YEAR DEBATE **FW 3 hrs.**
Research and development of the various types of debate formats using national and international topics of current interest. The student may be interested in developing further into debate competition.

SPCH 233 DISCUSSION **S 3 hrs.**
This class is concerned with the language of group interaction, with emphasis on types of groups, purposes, group structure, task orientation, group climate, and group consensus. Assignments based on topics of current interest.

SPCH 241, 242, 243 ORAL INTERPRETATION **FWS 3 hrs.**
Emphasis is placed on the ability of the speaker to read effectively the writings of others. Selected areas are poetry, prose (including essays), and group interpretation commonly known as readers theatre. The emphasis is on communicating the author's meaning to the listeners.

SPCH 244, 245, 246 PROBLEMS IN SPEECH **FWS 1 hr.**
Independent study in speech. See SPCH 144, 145, 146.

SPCH 301 LANGUAGE OF SPEECH **F 3 hrs.**
The study of the organization, language, and structure of speech content. Concentration is on the drafting of speeches from the rough draft to final draft, with emphasis on language and sentence structure. Offered alternate years.

SPCH 302 BUSINESS AND PROFESSIONAL SPEAKING **W 3 hrs.**
Emphasizes the aspects to be considered when a speaker is appearing before a group or organization as a member or guest. Includes choice of subject matter, audience analysis, interest value, research and development. Offered alternate years.

SPCH 303 PSYCHOLOGY OF SPEECH **S 3 hrs.**
A study of the nature of audiences: their reactions, attitudes, wants and needs. Also, the course analyzes the problems that speakers may encounter: reticence, stage fright, self-image, other-image, and ways to overcome speech situations which present problems to the speaker. Offered alternate years.

SPCH 331, 332 SECOND-YEAR DEBATE **FW 3 hrs.**
A continuation of SPCH 231, 232 with the emphasis on competitive debate using the national college topics. Research and case development are stressed.

SPCH 333 DISCUSSION **S 3 hrs.**
A second course in discussion, using topics of current interest. See SPCH 233.

SPCH 344, 345, 346 PROBLEMS IN SPEECH **FWS 1 hr.**
Independent study in speech. See SPCH 144, 145, 146.

SPCH 401, 402 SPEECH ANALYSIS **FW 3 hrs.**
The study of world-famous speeches and speakers of the past and present. The effect upon certain eras, movements, and periods of unrest as evidenced by the leadership of the time. Emphasis is on the ethos, pathos, and logos of the speaker's persuasion. Offered alternate years.

SPCH 403 GENERAL SEMANTICS **S 3 hrs.**
This course might well be called "The Power of Words." The effect of slang, triteness, labels, and colloquialisms upon the public and individual reactions to these techniques of language. Covers background of ethnic language and helps develop awareness of the effect of words in interpersonal and political relationships. Offered alternate years.

SPCH 444, 445, 446 SENIOR PROBLEMS IN SPEECH **FWS 1 hr.**
Independent study in speech. See SPCH 144, 145, 146.

Occupational Guidance

Mesa College offers a program leading to the Bachelor of Science degree in Occupational Guidance Specialist. This program has been developed to train counseling personnel at various levels for jobs in business and industry, social and governmental agencies, and educational institutions.

Thomas D. Graves, Program Coordinator

Occupational Guidance Specialist

PROGRAM GOALS AND CHARACTERISTICS

The Occupational Guidance Specialist program at Mesa College offers a curriculum designed to:

1. Produce graduates with competencies to meet career-development guidance and personnel needs in three broad areas: (a) as guidance specialists in educational institutions assisting counselors and other education professionals with the career-development needs of students; (b) as counselors in a variety of governmental agencies; and (c) as personnel and industrial relations professionals in business and industry.
2. Provide the breadth and depth of learning opportunity necessary for students considering graduate studies for advanced degrees.
3. Recognize and award college credit for work experience properly presented and documented, thus enabling the student to complete the baccalaureate degree on an accelerated basis. Students entering the program without work experience will be assisted in developing a program of occupational studies to meet this 45-hour requirement. Other students who may have completed a vocational-technical training program at Mesa College or other accredited post-secondary institution may use up to 45 quarter hours of their occupational program to meet the Occupational Studies requirement.

BACHELOR OF SCIENCE

Courses recommended for meeting General Education requirements for the baccalaureate degree: *(See Graduation Requirements)*

English Composition 111, 112, 113 or 115 or Literature	9 hours
Humanities or Fine Arts	6 hours
Psychology 121, 122, 123	9 hours
Physical Science or Mathematics	9-15 hours
Sociology or Economics	9 hours

Specific Course Requirements:

Course No.		*Course Title*	*Credit Hours*
MATH	131	College Algebra †	3 hours
MATH	100	Mathematics Lab	1 hour
STAT	200	Introduction to Probability and Statistics	5 hours
ECON	201, 202, 203	Principles of Economics	9 hours
		or	
SOC	261, 262	General Sociology (plus a 3-hour elective course)	9 hours
EDUC	251	Introduction to Education	3 hours
BUMA	121	Human Relations in Business	3 hours
BUMA	371	Personnel Management	3 hours
I-PSY		Psychology	15 hours
*OGSP	290	Occupational Studies	45 hours
OGSP	321	Principles and Practices of Occupational Guidance	3 hours
OGSP	322	Testing for Career Counseling	3 hours
OGSP	323	Sources and References for Career Orientation	3 hours
OGSP	421	The Art of Listening	3 hours
OGSP	422	Interviewing Techniques	3 hours
OGSP	423	Group Guidance Techniques	3 hours
OGSP	411	Practicum — Business	6 hours

OGSP	412	Practicum — Educational Institutions	6 hours
OGSP	413	Practicum — Governmental Units	6 hours

[+] *Psychology courses for meeting this requirement will be selected in consultation with the student's adviser so that competencies consistent with individual program goals are developed.*

[*] *This requirement may be completed in any of the following ways:*
(1) Work experience may be submitted and evaluated by the college for a maximum of 36 hours credit;
(2) The student may complete occupation oriented coursework as approved by his adviser; or
(3) A combination of the above.

Electives as necessary to total 183 quarter hours. Electives should be developed in consultation with the student's adviser so that the total program aims toward competency in any of the three broad areas of guidance specialist in education, governmental counselor, or business personnel work.

Recommended Courses:

BUGB	101	Introduction to Business	3 hours
BUMA	101	Principles of Management	3 hours
BUMA	102	Internal Business Organizational Structure	3 hours
BUMA	103	Forms of Business Organizations	3 hours
ECON	301	Labor-Management Relations	3 hours
ECON	401	Government and Business	3 hours
ECON	410	Public Finance	3 hours

OGSP 321 PRINCIPLES AND PRACTICES OF OCCUPATIONAL GUIDANCE **F 3 hrs.**
Analysis of career development theory, factors influencing career development, individual and group counseling and an effective career guidance program are among the topics discussed.

OGSP 322 TESTING FOR CAREER COUNSELING **W 3 hrs.**
An introduction to the theory and practice of using standardized tests and interpretation of results. Includes group versus individual tests, reliability, validity, and standardization procedures.

OGSP 323 SOURCES AND REFERENCES FOR CAREER ORIENTATION **S 3 hrs.**
Emphasis is on providing resources and information for assisting the career-development and planning process. Topics include locating, appraising, classifying, retaining and using occupational information in career counseling and guidance.

OGSP 411 PRACTICUM — BUSINESS **6 hrs.**
OGSP 412 PRACTICUM — EDUCATIONAL INSTITUTION **6 hrs.**
OGSP 413 PRACTICUM — GOVERNMENTAL UNITS **6 hrs.**
Students are placed in business and industry, educational institutions and governmental units to gain supervised professional experience in each of the three areas of concentration. The objective is to gain useful exposure and experience in career development, career guidance, and personnel work by working with counselors and personnel managers. A typed paper must be submitted for approval and course credit.

OGSP 421 THE ART OF LISTENING **F 3 hrs.**
Exploration and examination of assorted practices and conditions which facilitate interpersonal communication and effective career development. Discussion of the facilitative effects of empathy, congruence, positive regard, value identification, and attitude clarification in groups.

OGSP 422 INTERVIEWING TECHNIQUES **W 3 hrs.**
Career-guidance and personnel-interviewing techniques for making occupational and educational plans and decisions. Topics include: evaluation interviews, Interpersonal Maturity Level Classification System, questioning techniques, interpreting interview findings, and reporting interview findings.

OGSP 423 GROUP GUIDANCE TECHNIQUES **S 3 hrs.**
Emphasis is on procedures and processes for helping others in groups to develop self-understanding in relation to careers and to make vocational plans and decisions for their future. Techniques to be studied include various group tests used for appraising interests, values, and aptitudes, in addition to recently developed career guidance and counseling materials and programs.

Division of Physical Education and Recreation

The Division of Physical Education and Recreation offers courses in health education, recreation and leisure services, and physical education activities for all students. It also offers an intercollegiate athletic program consisting of eight varsity sports.
The activity program is designed to secure optimum health and physical fitness based upon the individual needs and interests of the students. Students working on degree programs must fulfill the College's physical education requirements by enrolling in three different activity courses during three separate quarters.

Wayne W. Nelson, Division Chairman

Bergman, Haroldson, Humphries, Leapley, Perrin, A. Sanders, Swanson, Swenson, Tooker, Wiehe

Degree Programs

ASSOCIATE IN ARTS IN PHYSICAL EDUCATION (Two-Year Transfer)

Required: General Education requirements; Fundamentals of Sports series; PER 200, 240, 260, 265.

CERTIFICATE PROGRAM: RECREATION LEADERSHIP (Three-Year)

Required: General Education requirements; Core Courses; Emphasis Area (one); Internship.

B.A. DEGREE IN LEISURE AND RECREATION SERVICES (Four-Year)

Required: General Education requirements; Core Courses; Emphasis Area (one or two); Internship; 33 hours of electives; 45 hours of upper division classes.

CORE COURSES REQUIRED FOR RECREATION MAJORS
(Certificate and Bachelor of Arts)

Course No.		Course Title	Credit Hrs.
ART	115	Crafts Survey	3
DRAM	213	Creative Play Activities — Drama	3
PER	200	Introduction to Recreation	3
PER	260	Personal and Community Health	3
PER	270	Recreation and Special Populations	3
PER	331-336	Recreation Activity and Skill Series	10
PER	372	Recreation for the Handicapped	3
PER	380	Outdoor Recreation Planning and Design	3
PER	382	Camp Counseling	3
PER	384	Philosophy of Leisure in Contemporary Society	3
PER	386	Recreation Leadership and Supervision	5
PER	480	Organization and Administration of Recreation	3
PER	492	Management and Operation of Public, Semi-Public, and Aquatic Facilities	3
PER	484	Programs in Recreation	3
		Total Hrs.	51

RECREATION LEADERSHIP (Certificate Program)

Any full-time student enrolled at Mesa College in a four-year Bachelor of Arts program may complete the required courses for Recreation Leadership and receive the leadership certificate. This program is designed to strengthen employment opportunities within allied fields. Required courses: General Education requirements; ART 115; DRAM 213; Core Courses PER 200, 270, 295, 331-4, 372, 382, 386.

EMPHASIS AREAS

In addition to the core courses, each student will choose one or two emphasis areas for concentrated study. These areas include: (1) Outdoor Recreation, (2) Recreation for the Senior Citizen, (3) Visual Arts, (4) Performing Arts, (5) Business Management, (6) Parks Management.

Performing Arts dance emphasis requires a minimum of 24 hours of approved work in dance, including six hours from dance technique classes and six hours from dance theory classes.

INTERNSHIP

Each major will complete at least one internship during the senior year or the summer preceding. The internship consists of placement in a recreation agency for one full quarter. Students should plan their schedules to accommodate this course.

Physical Education and Recreation

PER 111 Swimming
PER 112 Diving
PER 113 Bowling
PER 114 Golf
PER 115 Badminton
PER 116 Square and Folk Dance
PER 117 Social Dance
PER 118 Modern Dance
PER 119 Archery
PER 120 Tennis
PER 121 Skiing
PER 122 Physical Conditioning
PER 123 Handball
PER 124 Weight Training (Men)
PER 125 Wrestling (Men)
PER 126 Track and Field
PER 128 Body Improvement (Women)
PER 131 Orienteering
PER 133 Gymnastics
PER 134 Ballet
PER 135 Modern Jazz
PER 136 Paddleball
PER 137 Hatha Yoga
PER 138 Tap Dancing
PER 139 Bicycling
PER 143 Canoeing (Red Cross)
PER 144 Sailing (Red Cross)
PER 145 Horseback Riding
PER 146 Roller Skating
PER 147 Cross-Country Skiing
PER 151 Softball
PER 152 Volleyball
PER 153 Flag Football
PER 154 Soccer
PER 155 Baseball
PER 156 Basketball
PER 157 Speedball
PER 158 Water Polo
PER 159 Field Hockey
PER 171 Varsity Football
PER 172 Varsity Basketball
PER 173 Varsity Baseball
PER 174 Varsity Wrestling
PER 175 Varsity Tennis
PER 177 Varsity Track
PER 181 Backpacking
PER 191 Stepperettes

PER 200 INTRODUCTION TO PHYSICAL EDUCATION OR RECREATION F 3 hrs.
Orientation to the breadth, scope, and nature of the professional program in physical education or recreation.

PER 220-9 FUNDAMENTALS OF SPORTS FWS 2 hrs.
A series of courses in which majors can learn the fundamentals, theory, and methods by which sports can be adapted to a variety of uses. The sports offered are: football, field sports, physical conditioning, gymnastics, basketball, tennis, volleyball, social and square dance. Offered alternate years.

PER 230 BEGINNING IMPROVISATION AND COMPOSITION — DANCE (1979) W 3 hrs.
Theory and practice in basic principles of dance composition.

PER 231 CREATIVE PLAY ACTIVITIES — DANCE F 3 hrs.
A course designed for students who will be working with children. Emphasis is placed on creative movement exploration through the Laban theories of body, effort, space, and relationship.

PER 233 REPERTORY DANCE 1 hr.
Student participates directly in the production of a dance choreographed by faculty or guest artist.

PER 240 SPORTS OFFICIATING W 3 hrs.
Skills and techniques of officiating the three major sports: football, basketball, baseball. Lecture-lab. Sophomore standing recommended.

PER 250 SENIOR LIFESAVING WS 2 hrs.
American Red Cross course. ARC Senior Lifesaving certification to qualified students.

PER 251 WATER SAFETY INSTRUCTORS COURSE S 3 hrs.
American Red Cross course. ARC W.S.I. certification to qualified students. Prerequisite: ARC senior lifesaving certificate.

PER 253 BASIC CANOEING AND BOATING S 2 hrs.
American Red Cross course. ARC canoeing, rowing, and outboard boating certification to qualified students. Prerequisite: PER 111 or permission of instructor.

PER 260 PERSONAL AND COMMUNITY HEALTH W 3 hrs.
Personal health problems and health problems of the community. Emphasis on development of proper attitudes and health practices.

PER 265 FIRST AID FS 2 hrs.
American Red Cross course. ARC standard certification to qualified students.

PER 270 RECREATION AND SPECIAL POPULATIONS F 3 hrs.
The study of recreation as a resource and tool for recreational personnel working with specific special populations. The special populations treated are as follows: mentally retarded, youthful and adult offenders, mentally ill, drug addict and alcoholic, physically disabled, visually impaired, economically deprived, racial minorities, the aging.

PER 272 GUN AND HUNTER SAFETY 5 5mr 2 hrs.
Fundamentals and safety responsibility for the firearms user. Marksmanship, gun handling, history of firearms, and the use of different firearms.

PER 273 FLY TYING AND CASTING 5 5mr 2 hrs.
Fundamentals of fly tying, choosing correct flies, choosing materials for fly tying.

PER 290 INDEPENDENT STUDY IN PHYSICAL EDUCATION FWS 1-3 hrs.

PER 291 INDEPENDENT STUDY IN HEALTH FWS 1-3 hrs.

PER 295 PHYSICAL EDUCATION AND RECREATION ASSISTANTSHIP FWS 5mr 1 hr.
Assisting public school teachers in physical education activities or public recreation practitioners in the recreation setting.

PER 296 INDEPENDENT STUDY IN DANCE COMPOSITION FWS 1-3 hrs.

PER 321 REPERTORY DANCE 1 hr.
See PER 233 for course description.

PER 324 DANCE PRODUCTION (1978) S 3 hrs.
Analysis and practice in elements of publicity, lighting, costuming, and makeup for dance. Emphasis is placed on the non-traditional forms of dance production.

PER 331-6 RECREATION ACITIVITY AND SKILL SERIES FWS 2 hrs.
The study of skill development, materials, methods of instruction or supervision, organization and administration of activity in the recreation setting. The activities are golf, handball and racket games, softball, playground skills, swimming, track and field, and skiing.

PER 360 CONTEMPORARY ISSUES IN HEALTH S 3 hrs.
In-depth study of drug abuse and human sexuality.

PER 370 SOCIAL RECREATION 3 hrs.
Methods and skills in leading groups in games, ice-breakers, and other social recreation with special emphasis on planning activities and parties for children.

PER 371 ACTIVITIES FOR OLDER PERSONS 2 hrs.
Individual and dual games requiring little organization and especially suitable for older persons.

PER 372 RECREATION FOR THE HANDICAPPED F 3 hrs.
Study of recreation activity and its modification and adaptation for the handicapped individual.

PER 380 OUTDOOR RECREATION PLANNING AND DESIGN W 3 hrs.
Survey of outdoor recreation areas and facilities with special emphasis on planning, design, site selection, and acquisition.

PER 382 CAMP COUNSELING S 3 hrs.
Techniques of camp counseling; program content and administration of recreational camps for the short-term camper; organization and leadership for rural and urban camps; planning for successful family camping experiences.

PER 384 LEISURE IN CONTEMPORARY SOCIETY F 3 hrs.
Interpretation of recreation as a basic part of the living process; importance in individual communities and national life; the growing importance of leisure-time problems.

PER 386 · RECREATION LEADERSHIP AND SUPERVISION **5 5 hrs.**
Theory and application of leadership as it pertains to tax-supported and voluntary agencies; understanding of the individual's role; problems of supervision; recruitment, assignment, evaluation, and in-service training.

PER 396 INDEPENDENT STUDY IN DANCE COMPOSITION **FWS 1-3 hrs.**

PER 421 REPERTORY DANCE **1 hr.**
See PER 233 for course description.

PER 470 MANAGEMENT AND OPERATION OF GOLF FACILITIES **3 hrs.**
Basic fundamentals of operating golf facilities with special emphasis on turf maintenance, concession facilities, equipment purchasing, sample bids and lease proposals, legal liabilities, programming of lessons and tournaments, course design, pro shop operation, and driving range operation. Offered as an elective once every two years.

PER 480 ORGANIZATION AND ADMINISTRATION OF RECREATION SERVICES **5 3 hrs.**
Modern theory and methodology of the administrative process, personnel management, budget and fiscal management, public relations, planning, evaluation and research, structure and organization, department manuals and guidelines.

PER 482 MANAGEMENT AND OPERATION OF AQUATIC FACILITIES **F 3 hrs.**
Management procedures and skills for effective operation of indoor and outdoor aquatic facilities, including pool chemistry, pool design, equipment purchase, total maintenance program, programming, finances, and safety.

PER 484 PROGRAMS IN RECREATIONS **W 3 hrs.**
Effective methods for the task of planning a balanced community recreation program.

PER 495 INTERNSHIP IN RECREATION **FWS Smr 15 hrs.**
Full-time placement in a recreation agency. The course is designed to provide a smooth transition from the classroom to the work setting through firsthand experience. Note: Application must be made during the first two weeks of the quarter prior to the quarter the internship is required.

PER 496 INDEPENDENT STUDY IN DANCE COMPOSITION **FWS 1-3 hrs.**

PER 499 INDEPENDENT STUDY IN RECREATION **FWS 2-5 hrs.**

Division of Physical Sciences

William E. Putnam, Division Chairman

Allmaras, Boge, Foutz, Fynn, J. Johnson, V. Johnson, Keith, Lenc, Raadifer, K. White.

GENERAL INFORMATION

The Division of Physical Sciences offers a variety of two-year transfer programs and one baccalaureate program. Associate in Science degrees can be earned with specialization in chemistry, geology, physics, and several pre-professional fields such as medicine. Although a person earning one of these degrees might elect to terminate his formal education at this level it would normally be expected that these studies would be continued by transferring to an institution offering appropriate baccalaureate programs. Also, the Bachelor of Science degree with a major in Environmental Geoscience can be earned. The content of this somewhat non-traditional program is indicated below.

GENERAL REQUIREMENT

Most courses in this division are intended to include laboratory work. For students' convenience the class and laboratory portions of such courses are technically treated as different courses with distinctive numbers and individual grades. It is required, however, that a student enrolled in such a class or laboratory be also enrolled in the other unless credit in it has already been established.

ASSOCIATE DEGREE PROGRAM SPECIFICATIONS

Institutional requirements for the Associate in Science degree are listed elsewhere in this catalog. Within these requirements it is expected that the candidate will select the courses of study best suited to the achievement of his ultimate goal. To this end it is expected that he will consult frequently with a faculty advisor who is aware of current views of potential employers and transfer institutions concerning the contents of these programs.

ENVIRONMENTAL GEOSCIENCE PROGRAM DESCRIPTION

Mesa College is ideally located for the study of modern concepts in environmental geoscience. Situated at the junction of the Colorado and Gunnison Rivers, near the boundary between the Rocky Mountain and Colorado Plateau provinces, it is surrounded by a great variety of geologic features. In nearby areas are unexcelled exposures of sedimentary and other rock types, folds and faults, uranium deposits, base metal ore bodies, oil and gas fields, and the world's largest and richest oil shale deposits. Mesa College is also located in the heart of "Dinosaur Country." The two largest dinosaurs ever discovered, along with numerous lesser ones, have been quarried within 25 miles of the campus.

The increasing demand for energy and metals has resulted in accelerated exploration for and exploitation of the mineral resources of the region. Oil and gas wells have been drilled, coal and metal mines have been developed, ski and other recreational facilities have flourished in the nearby mountains, and the adjacent Piceance Creek Basin has witnessed two nuclear gas-stimulation shots and the first major attempts at commercial extraction of shale oil. Such activities spawn complex environmental problems such as air and water pollution, unstable slopes, accelerated erosion and the need for site restoration. The surroundings are thus a natural outdoor geological laboratory, accessible the year around, where students can combine classroom instruction with direct observation of both natural and disturbed geological features.

In addition to the environmental option described in the foregoing paragraph, environmental geoscience courses are offered which can be grouped to constitute what can be

called a geology option. A student planning to seek admission to graduate school should choose this option.

ENVIRONMENTAL GEOSCIENCE BACHELOR OF SCIENCE DEGREE REQUIREMENTS

1. Environmental option

Credit must be earned in the following Environmental Geoscience courses: GEOL 111, 111L, 112, 112L, 113, 113L, 201, 201L, 202, 203, 301, 301L, 302, 303, 321, 322, 401, 402, 403, 404, (or 405), 411, 412, 412L (off campus training may be substituted for GEOL 401 and 411). Credit must also be earned in supporting courses as follows: ENGL 111, 112, 113; SPCH 102; GEOG 101; CHEM 121, 121L, 122, 122L, 123, 123L; PHYS 241, 241L, 242, 242L, 243, 243L; MATH 131, 138, 139 (MATH 311, 132, 140 and STAT 200 or CSCI 131 may be taken as an option); ECON 201, 202, or BUAC 101, 201; nine hours of literature or nine hours of a foreign language, which may not be divided and combined; nine hours total of some plant and some animal biology selected from BIOL 121, 122, 141, 142, 143, 201.

2. Geology option

Credit must be earned in the following Environmental Geoscience courses: GEOL 111, 111L, 112, 112L, 113, 113L, 201, 201L, 203, 212, 212L, 301, 301L, 302, 303, 321, 322, 331, 331L, 332, 332L, 401, 403, 404, 412, 412L (off campus training may be substituted for GEOL 401 and 411). Credit must also be earned in supporting courses as follows: ENGL 111, 112, 113; SPCH 102; GEOG 101; CHEM 121, 121L, 122, 122L, 123, 123L, PHYS 241, 241L, 242, 242L, 243, 243L; MATH 131, 138, 139 (MATH 131, 132, 140 and STAT 200 or CSCI 131 may be taken as an option); ECON 201, 202 or BUAC 101, 201; nine hours of literature or nine hours of a foreign language, which may not be divided and combined; nine hours total of some plant and some animal biology selected from BIOL 121, 122, 141, 142, 143, 201.

It is strongly recommended that students contemplating seeking admission to graduate school earn credit in CHEM 131, 131L, 132, 132L, 133, 133L; PHYS 251, 251L, 252, 252L, 253, 253L; MATH 151, 152, 153, 254; nine hours of a foreign language. These are in lieu of corresponding courses in the required curriculum or, with the foreign language, a substitution.

RECOMMENDED CURRICULA

The following are recommended curricula for the first two years of several programs in the Division of Physical Sciences. They are intended as suggestions only and will be modified frequently to satisfy individual needs.

CHEMISTRY AND PHYSICS

FIRST YEAR

Fall Quarter	*Hrs.*
Mathematics 138	5
Chemistry 131	4
Chemistry 131L	1
English 111	3
History 101	3
	16

Winter Quarter	*Hrs.*
Mathematics 139	5
Chemistry 132	4
Chemistry 132L	1
English 112	3
History 102	3
	16

Spring Quarter	*Hrs.*
Mathematics 151	5
Chemistry 133	4
Chemistry 133L	1
English 113	3
History 103	3
	16

SECOND YEAR

Fall Quarter	*Hrs.*
Mathematics 152	5
Chemistry 211	3
Chemistry 211L	2
Physics 251	4
Physics 251L	1
Physical Education Activity	1
	16

Winter Quarter	*Hrs.*
Mathematics 153	5
Chemistry 212	3
Chemistry 212L	2
Physics 252	4
Physics 252L	1
Physical Education Activity	1
	16

Spring Quarter	*Hrs.*
Mathematics 254	5
Chemistry 213	3
Chemistry 213L	2
Physics 253	4
Physics 253L	1
Physical Education Activity	1
	16

ENVIRONMENTAL GEOSCIENCE

ENVIRONMENTAL OPTION

FIRST YEAR

Fall Quarter	Hrs.
English 111	3
Geology 111	4
Geology 111L	1
Mathematics 131	3
Literature 131 or Foreign Language	3
Geography 101	3
Physical Education Activity	1
	18

Winter Quarter	Hrs.
English 112	3
Geology 112	4
Geology 112L	1
Mathematics 132 or Mathematics 138	3-5
Literature 132 or Foreign Language	3
Physical Education Activity	1
	15-17

Spring Quarter	Hrs.
English 113	3
Geology 113	4
Geology 113L	1
Mathematics 140 or Mathematics 139	3-5
Literature 133 or Foreign Language	3
Physical Education Activity	1
	15-17

SECOND YEAR

Fall Quarter	Hrs.
Biology selected from 121, 141, or 201	4-5
Chemistry 121 and 121L	5
Geology 201 and 201L	3
Economics 201 or Accounting 101	3-5
	15-18

Winter Quarter	Hrs.
Biology selected from 122,142, or 143	5
Chemistry 122 and 122L	5
Geology 203	2
Economics 202 or Accounting 201	3-5
	15-17

Spring Quarter	Hrs.
Speech 102	3
Chemistry 123 and 123L	5
Geology 202	3
*Statistics 200 or Computer Sci 131	5
Electives	3
	19

*For those students who take MATH 131, 132, 140.

GEOLOGY OPTION

FIRST YEAR

Fall Quarter	Hrs.
English 111	3
Geology 111	4
Geology 111L	1
Mathematics 131	3
Literature 131 or Foreign Language	3
Geography 101	3
Physical Education Activity	1
	18

Winter Quarter	Hrs.
English 112	3
Geology 112	4
Geology 112L	1
Mathematics 132 or Mathematics 138	3-5
Literature 132 or Foreign Language	3
Physical Education Activity	1
	15-17

Spring Quarter	Hrs.
English 113	3
Geology 113	4
Geology 113L	1
Mathematics 140 or Mathematics 139	3-5
Literature 133 or Foreign Language	3
Physical Education Activity	1
	15-17

SECOND YEAR

Fall Quarter	Hrs.
Biology selected from 121, 141, or 201	4-5
Chemistry 121 and 121L	5
Geology 201 and 201L	3
Economics 201 or Accounting 101	3-5
	15-18

Winter Quarter	Hrs.
Biology selected from 122, 142, or 143	5
Chemistry 122 and 122L	5
Geology 203	2
Economics 202 or Accounting 201	3-5
Geology 212 and 212L	3
	18-20

Spring Quarter	Hrs.
Speech 102	3
Chemistry 123 and 123L	5
Geology 213 and 213L	3
*Statistics 200 or Computer Sci 131	5
Electives	3
	19

*For those students who take MATH 131, 132, 140.

PRE-MEDICINE, PRE-DENTISTRY, PRE-VETERINARY MEDICINE

FIRST YEAR

Fall Quarter	Hrs.
Biology 141	4
English 111	3
Chemistry 131	4
Chemistry 131L	1
Mathematics 138	5
	17

Winter Quarter	Hrs.
Biology 142	5
English 112	3
Chemistry 132	4
Chemistry 132L	1
Mathematics 139	5
	18

Spring Quarter	Hrs.
Biology 143	5
English 113	3
Chemistry 133	4
Chemistry 133L	1
Mathematics 151	5
	18

SECOND YEAR

Fall Quarter	Hrs.
Chemistry 211	3
Chemistry 211L	2
Literature 131	3
Physics 241	4
Physics 241L	1
Physical Education Activity	1
	14

Winter Quarter	Hrs.
Chemistry 212	3
Chemistry 212L	2
Literature 132	3
Physics 242	4
Physics 242L	1
Physical Education Activity	1
	14

Spring Quarter	Hrs.
Chemistry 213	3
Chemistry 213L	2
Literature 133	3
Physics 243	4
Physics 243L	1
Physical Education Activity	1
	14

Chemistry

CHEM 121, 122 GENERAL CHEMISTRY **FWS 4 hrs.**
A lecture course in fundamental principles of chemistry and their application. The areas covered include atomic structure, bonding, periodic laws, gas laws, mass relationships, classification of compounds, oxidation-reduction, electro-chemistry and ionic equilibrium. Designed for students in liberal arts, nursing, homemaking and agriculture. Prerequisites: high school algebra, or satisfactory entrance examination scores. Four lectures per week. (CHEM 121 offered also in Summer Session.)

CHEM 121L, 122L GENERAL CHEMISTRY LABORATORY **FWS 1 hr.**
Laboratory work designed to acquaint the student with the procedures and techniques of basic chemistry. The work involves measurement and observation of physical properties and chemical changes. One three-hour session per week. (CHEM 121L offered also in Summer Session.)

CHEM 123 INTRODUCTORY ORGANIC CHEMISTRY **S 4 hrs.**
A lecture course in fundamentals of organic chemistry. Introductions to carbonium ion and acid-base theory are included, as well as to nomenclature of the chemical and physical properties of selected classes of compounds. Four lectures per week. Prerequisite: CHEM 122 or 132.

CHEM 123L INTRODUCTORY ORGANIC CHEMISTRY LABORATORY **S 1 hr.**
Laboratory work designed to acquaint the student with several fundamental organic laboratory procedures, properties of selected classes of compounds, and some of the methods of preparative organic chemistry. One three-hour session per week.

CHEM 131, 132 GENERAL INORGANIC CHEMISTRY **FWS 4 hrs.**
Fundamental principles of general inorganic chemistry. Included are atomic structure, chemical bonding, periodic law, kinetic theory, stoichiometry, gas laws, chemical equilibrium, oxidation and reduction, and electrochemistry. Intended for students of chemistry, engineering, pre-medicine, pre-veterinary medicine, and other sciences. Corequisite: MATH 131, 138, or higher math course. Prerequisite: high school chemistry and satisfactory ACT scores or CHEM 121. Four lectures per week.

CHEM 131L, 132L GENERAL INORGANIC CHEMISTRY LABORATORY **FWS 1 hr.**
An introduction to gravimetric and volumetric analysis. One three-hour session per week.

CHEM 133 INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS **S 3 hrs.**
A lecture course designed thoroughly to acquaint the student with the equilibrium systems of inorganic chemistry in a theoretical and practical way with emphasis on the broad view of inorganic chemistry. Three lectures per week.

CHEM 133L INORGANIC CHEMISTRY AND QUALITATIVE ANALYSIS LABORATORY **S 2 hrs.**
Laboratory work based on traditional cation qualitative analysis emphasizing acid-base and precipitation equilibrium principles. Two three-hour sessions per week.

CHEM 141 INTRODUCTORY INORGANIC, ORGANIC, AND PHYSIOLOGICAL CHEMISTRY **F, Smr. 3 hrs.**
Lectures on the principles of inorganic, organic, and biochemistry. Intended primarily for students in the associate degree nursing and medical office assistant programs. Prerequisite: high school chemistry or CHEM 121. Three lectures per week.

CHEM 142 PHYSIOLOGICAL CHEMISTRY **W 2 hrs.**
A continuation of the biochemistry part of CHEM 141 with emphasis on the metabolism of carbohydrates, proteins, and lipids. Prerequisite: CHEM 141. Two lectures per week.

CHEM 148 INDEPENDENT STUDY IN CHEMISTRY **FWS 1 hr.**
A course in which a student with a previously developed interest in and knowledge of a specialized subject can continue his work. Although it is expected that most such work will be original, studies of a non-original nature but not in the established curriculum will also satisfy the requirements of this course. Prerequisite: consent of the instructor.

CHEM 149 INDEPENDENT STUDY IN CHEMISTRY **FWS 2 hrs.**
See Independent Study course description under CHEM 148.

CHEM 211, 212, 213 ORGANIC CHEMISTRY **FWS 3 hrs.**
Lectures and discussions concerning the chemical and physical properties of the major classes of organic compounds. Mechanistic, stereochemical, acid-base, and related theories are used throughout to relate types of reactions and unify the subject. Prerequisite: CHEM 132 or consent of instructor. Three lectures per week.

CHEM 211L, 212L, 213L ORGANIC CHEMISTRY LABORATORY **FWS 2 hrs.**
Laboratory exercises to accompany CHEM 211, 212, 213. Provides experience in the syntheses of and with the reactions of many classes of compounds. Classical qualitative analysis is introduced. Some experience with methods used to establish theoretical principles is also obtained. Two three-hour sessions per week.

CHEM 221, 222 INSTRUMENTAL METHODS OF ANALYSIS **FW 1 hr.**
General theory of instrumental analyses. Prerequisite: CHEM 132 or consent of instructor. One lecture per week. Not offered every year.

CHEM 221L, 222L INSTRUMENTAL METHODS OF ANALYSIS LABORATORY **FW 2 hrs.**
Practice of instrumental analyses, principally spectroscopic methods. Two three hour sessions per week. Not offered every year.

CHEM 248 INDEPENDENT STUDY IN CHEMISTRY **FWS 1 hr.**
See Independent Study course description under CHEM 148.

CHEM 249 INDEPENDENT STUDY IN CHEMISTRY **FWS 2 hrs.**
See Independent Study course description under CHEM 148.

Geology

GEOL 101, 102, 103 INTRODUCTORY GEOLOGY **FWS 4 hrs.**
A general approach to the broad aspects of geology and closely related fields. The earth's environment in space, its atmosphere, hydrosphere and composition are considered fall quarter. The winter quarter study of earth processes is expanded during spring quarter, to consider the origin and physical changes of the earth and the evolution of life forms throughout earth history. Designed for non-science majors, without previous earth science experience, who need a laboratory science (refer to laboratory description). Four lectures per week. Should be taken in sequence.

GEOL 101L, 102L, 103L INTRODUCTORY GEOLOGY LABORATORY **FWS 1 hr.**
Consists of weekly two-hour laboratory sessions and one or more field trips per quarter. Fall quarter involves mineral and rock identification and map interpretation. Topography and structure of the earth are studied winter quarter by use of photographs, maps, and cross sections. Interpretation of regional and general geologic history by examination of the rock sequence and fossil specimens is emphasized during spring quarter.

GEOL 111, 112, 113 PRINCIPLES OF GEOLOGY **FWS 4 hrs.**
General introduction to physical and historical geology. Fall and winter quarters devoted to a study of the earth, its materials, development of land forms and the geological processes acting on and within the earth. Spring quarter deals with origin of the earth, development of the geologic record through time and evolution of life forms in the fossil record. Designed as an introductory course for geology and other science majors. Should be taken in sequence. Four lectures per week.

GEOL 111L, 112L, 113L PRINCIPLES OF GEOLOGY LABORATORY **FWS 1 hr.**
A laboratory course designed to supplement the Principles of Geology lecture. Devoted to the study of minerals, rocks and fossils and to the study and interpretation of topographic and geologic maps and aerial photographs. Field trips to study local geological features and to collect fossils. Meets for one two-hour session or field trip each week. Should be taken in sequence.

GEOL 201 STRATIGRAPHY **F 2 hrs.**
Basic stratigraphic relations, facies, sedimentary rocks, environments of deposition, correlation, sedimentary tectonics, regional stratigraphic column and related engineering problems. Two lectures per week. Prerequisite: GEOL 113.

GEOL 201L STRATIGRAPHY LABORATORY **F 1 hr.**
Field trips to study local stratigraphic units and to observe weathering and engineering properties. One field trip per week.

GEOL 202 REGIONAL GEOLOGY **S 3 hrs.**
A study of the physical and historical geology of the Western Colorado Region, primarily in the field. One lecture and one three hour laboratory per week plus four all-day field trips and four half-day field trips. Prerequisite: GEOL 201.

GEOL 203 ENVIRONMENTAL EARTH SCIENCE **W 2 hrs.**
Relationship between man and his geological environment. Problems man faces in using the earth including pollution, waste disposal, geological hazards, and utilization of mineral resources. Two lectures per week. Prerequisite: consent of instructor.

GEOL 205 INDEPENDENT STUDY IN GEOLOGY FWS 1 hr.
For students who wish to pursue intensive study in a limited field. Consists of conferences, reading, laboratory or field work. May be taken more than once to a maximum of six credits to pursue different studies. Prerequisite: consent of instructor.

GEOL 206 INDEPENDENT STUDY IN GEOLOGY FWS 2 hrs.
See Independent Study course description under GEOL 205.

GEOL 211 MAP DRAFTING AND READING W 2 hrs.
Introductory course for students not taking a full year's program in drafting. Preparation and interpretation of geological illustrations such as maps, cross sections, three-dimensional diagrams, charts and tables. Emphasis is placed on selecting proper scale, using correct lettering techniques and determining the best means for presenting geological data. Two lectures per week. Prerequisite: consent of instructor.

GEOL 211L MAP DRAFTING AND READING LABORATORY W 1 hr.
A laboratory course designed to train the student in the use of basic drafting instruments and lettering equipment necessary for the preparation of geological illustrations. One two-hour session per week.

GEOL 212 INVERTEBRATE PALEONTOLOGY F 2 hrs.
Classification, age-significance, and environmental connotations of fossil brachiopods, mollusks, and foraminifera. Two lectures per week. Prerequisite: GEOL 113 or consent of instructor.

GEOL 212L INVERTEBRATE PALEONTOLOGY LABORATORY F 1 hr.
Spot identification at genus level of fossil specimens. Students will draw some specimens to aid in identification. One two-hour session per week.

GEOL 213 INVERTEBRATE PALEONTOLOGY W 2 hrs.
Classification, age and environments of trilobites, corals, echinoderms, conodonts, bryozoans and some other fossil invertebrates. Some field specimens will be collected and identified. This class is a logical continuation of GEOL 212, although GEOL 212 is not a prerequisite. Two lectures per week. Prerequisite: GEOL 113 or consent of instructor.

GEOL 213L INVERTEBRATE PALEONTOLOGY LABORATORY W 1 hr.
See Course description under GEOL 212L.

GEOL 301 EARTH TECTONICS F 2 hrs.
Nature and origin of rock structures and deformation both local and large scale will be discussed. Two lectures per week. Prerequisite: GEOL 112.

GEOL 301L EARTH TECTONICS LABORATORY F 1 hr.
Solution of problems by graphical, geometrical, and stereographic methods. Maps and cross-sections will be studied. One two-hour session per week.

GEOL 302, 303 MINERAL AND ENERGY RESOURCES WS 3 hrs.
The first course considers genesis, localization and evaluation of metalliferous ore deposits, including surface expression, secondary effects in the weathering zone, wall rock alteration and hypogene zoning. The second course considers occurrence, distribution, origin and economic value of nonmetallic minerals and petroleum. Three lectures per week. Prerequisite: consent of instructor.

GEOL 305 INDEPENDENT STUDY FWS 1 hr.
See Independent Study course description under GEOL 205.

GEOL 306 INDEPENDENT STUDY FWS 2 hrs.
See Independent Study course description under GEOL 205.

GEOL 315 MINE MAPPING AND MINING TECHNIQUES S 5 hrs.
Application of geology in mining operations; emphasis on mapping, mining methods and laboratory and office procedures in maintenance of ore reserves and control. One weekend spent in mapping geology of a mine. Saturday field trips. Prerequisite: consent of instructor.

GEOL 321 GENERAL FIELD PROCEDURES Smr 4 hrs.
Field methods used in geoscience; includes use of photographs, surveying, plane tabling, mapping techniques, measuring sections, preparation of geologic reports. Trips will be taken to local features of geologic interest. Two three-week sessions each week, consisting of four eight-hour days in the field and one day in the laboratory. A report is required for each week. Prerequisite: consent of instructor.

GEOL 322 FIELD PROBLEMS Smr 4 hrs.
Field studies in geoscience with emphasis on geologic mapping and report preparation. Local field trips will be taken. Two three-week sessions each week, consisting of four eight-hour days in the field and one day in the laboratory. A report is required for each week. Prerequisite: consent of instructor.

GEOL 331, 332 MINERAL STUDIES **FW 2 hrs.**
Morphological crystallography, recognition of minerals in hand specimen, relation of properties of minerals to their internal structure, mineral genesis, simple determination tests, and modern laboratory techniques. Two lectures per week. Prerequisite: consent of instructor.

GEOL 331L, 332L MINERAL STUDIES LABORATORY **FW 2 hrs.**
Identification and classification of rock forming and ore minerals. Includes instruction in use of x-ray, mass spectrometer, thermal, atomic absorption, and neutron activation equipment. Two two-hour sessions per week.

GEOL 340 IGNEOUS AND METAMORPHIC PETROLOGY **S 3 hrs.**
Origin, composition, and classification of igneous and metamorphic rocks. It is desirable that the student have had a course in mineral studies prior to enrolling in this course. Three lectures per week. Prerequisite: consent of instructor.

GEOL 340L IGNEOUS AND METAMORPHIC PETROLOGY LABORATORY **S 1 hr.**
Identification of hand specimens of igneous and metamorphic rocks. Some rocks will be examined in thin sections. One two-hour session per week. Prerequisite: consent of instructor.

GEOL 341 SEDIMENTARY PETROLOGY **S 3 hrs.**
Origin, composition, and classification of sedimentary rocks. Three lectures per week. Prerequisite: consent of instructor.

GEOL 341L SEDIMENTARY PETROLOGY LABORATORY **S 1 hr.**
Identification of hand specimens of sedimentary rocks. Some rocks will be examined in thin sections. One two-hour session per week. Prerequisite: consent of instructor.

GEOL 351 GEOCHEMICAL PROSPECTING **W 3 hrs.**
Principles of geochemistry and their relationship to weathering and soils, geochemical surveys, and prospecting techniques. Three lectures per week. Prerequisites: GEOL 111, 112, and 113 and CHEM 122 or 132 or equivalent.

GEOL 401 ADVANCED TOPICS IN GEOSCIENCE **S 3 hrs.**
Course consists of discussions of recent ideas, concepts and factual data relating to mineral deposits, petroleum, environmental geology and other fields of interest. Three lectures per week. Prerequisite: consent of instructor.

GEOL 402 APPLIED ENVIRONMENTAL GEOSCIENCE **W 3 hrs.**
Environmental analysis, productivity, theory, population fluctuations, paleoecology, water resources, earthquake hazards, soil analysis, slope stability, and related topics. Three lectures per week. One or more field trips. Prerequisite: consent of instructor.

GEOL 403 REPORT WRITING **W 3 hrs.**
Principles of technical writing, format for geologic reports, relationship of field or laboratory investigations and the resultant report. Critical review is given the reports for revision and rewrite where necessary. Two lectures and one consultation weekly.

GEOL 404, 405 GEOPHYSICAL PROSPECTING **FW 3 hrs.**
Study of principles and applications of seismic, electric, magnetic, gravity and radiation methods in hydrocarbon and mineral exploration. Drilling methods and borehole logging devices are included. Three lectures per week. Prerequisite: consent of instructor.

GEOL 404L, 405L GEOPHYSICAL PROSPECTING LABORATORY **FW 1 hr.**
Field investigations of geophysical and logging instruments. Students visit local exploration service companies and a drilling operation in the field. Occasional lectures by non-faculty geophysical specialists are included. One two-hour session per week.

GEOL 407 INDEPENDENT STUDY IN GEOLOGY **FWS 1 hr.**
See Independent Study course description under GEOL 205.

GEOL 408 INDEPENDENT STUDY IN GEOLOGY **FWS 2 hrs.**
See Independent Study course description under GEOL 205.

GEOL 411 GEOLOGIC SEMINAR **S 2 hrs.**
Current topics in geology and reports by participants in off-campus geoscience training program. Two class meetings per week. Prerequisite: consent of instructor.

GEOL 412 GEOMORPHOLOGY **F 2 hrs.**
Classification, recognition, origin and significance of land forms; use of aerial photographs in interpretation; land form analysis in interpretation of geologic structure and history. Two lectures per week. Prerequisite: consent of instructor.

GEOL 412L GEOMORPHOLOGY LABORATORY **F 1 hr.**
Laboratory and field study of the factors which have affected the local environment, such as streams, wind, frost, slope movement, ground water, and glaciers. Techniques of measurement and interpretation are emphasized. One two-hour laboratory session or four-hour field trip per week.

GEOL 445, 446, 447, 448, 449 FIELD EXPERIENCE IN GEOLOGY **3, 6, 9, 12, 15 hrs.**
Students may receive credit for work experience obtained on jobs where their assignments are primarily geological projects. The number of credit hours assigned to the student will be determined by the department. Prerequisites: geology major, senior standing or consent of instructor. Limit: 15 hours.

Interdisciplinary Study

INDI 411 SAN JUAN SYMPOSIUM **Smr 9 hrs.**
An interdisciplinary course involving the study of regional biology, geology and history, combining classroom study on campus with field study in the San Juan Mountains of Colorado.

Physical Science

PSCI 111, 112, 113 SURVEY OF PHYSICAL SCIENCE **FWS 3 hrs.**
An introduction to the fundamental principles of the physical sciences. It is expected that from this group of courses the student will receive a basic understanding of the physical world, an appreciation of the scientific method, and some conception of the social significance of science and technology. Introduced in PSCI 111 are mechanics, thermodynamics, electricity, magnetism, sound and optics. PSCI 112 is basically an introduction to the principles of chemistry, including those of nuclear chemistry and energy. Included in PSCI 113 are introductions to astronomy, meteorology and geology. Not recommended for students concurrently enrolled in another physical science course or with credit previously established in such a course. Three lectures per week.

PSCI 118 REGIONAL NATURAL SCIENCE **S 3 hrs.**
A course designed to acquaint students with the physiographic and ecologic relationships of the natural environment, with emphasis placed on the climate, geology, vegetation, wildlife, and the scenic and recreational attractions of the region. Three lectures per week.

PSCI 121 SOLAR SYSTEM ASTRONOMY **F 3 hrs.**
Introductory course designed for liberal arts students, prospective teachers or science majors. Subjects include: determination of location and time, gravity, sun, planets, comets, meteors, satellites, moon and astronomical instruments. Knowledge of elementary algebra is desirable. Nighttime observing will be scheduled when possible. Three lectures per week.

PSCI 122 STELLAR ASTRONOMY **W 3 hrs.**
A study of stars and star systems including: variables, binaries, clusters, nebula, galaxies and stellar evolution. Completion of PSCI 121 would be desirable but is not a prerequisite. Nighttime observing will be scheduled when possible. Three lectures per week.

PSCI 123 WEATHER AND CLIMATE **S 3 hrs.**
An introductory course designed for liberal arts students, prospective teachers and science majors. Subjects include: atmospheric structure, heat, pressure, wind, moisture, instruments, storms, forecasting and climate. Knowledge of elementary algebra is desirable. Field trips will be scheduled as possible. Three lectures per week.

Physics

PHYS 111 INTRODUCTION TO PHYSICS **S 4 hrs.**
Lectures in mechanics, electricity, magnetism, thermodynamics, sound and optics. Intended for students majoring in a field other than one of the sciences. Four lectures per week.

PHYS 111L INTRODUCTION TO PHYSICS LABORATORY **S 1 hr.**
A laboratory with special emphasis on the understanding of underlying principles and methods of physics and their application to life in modern times. One three-hour session per week.

PHYS 241, 242, 243 GENERAL PHYSICS **FWS 4 hrs.**
Lectures and discussions in mechanics, electricity, magnetism, thermodynamics, sound, optics, and modern physics. Problem solving is emphasized. Should be taken in sequence. Prerequisite: college trigonometry. Four lectures per week.

PHYS 241L, 242L, 243L GENERAL PHYSICS LABORATORY **FWS 1 hr.**
This course permits the student to observe some of the principles discussed in the lecture class, take and evaluate quantitative data and learn to prepare detailed laboratory reports. Should be taken in sequence. One three-hour session per week.

PHYS 248 INDEPENDENT STUDY IN PHYSICS **FWS 1 hr.**
A course in which a student with a previously developed interest in and knowledge of a specialized subject can continue his work. Although it is expected that most such work will be original, studies of a non-original nature but not in the established curriculum will also satisfy the requirements of this course. Prerequisite: consent of the instructor.

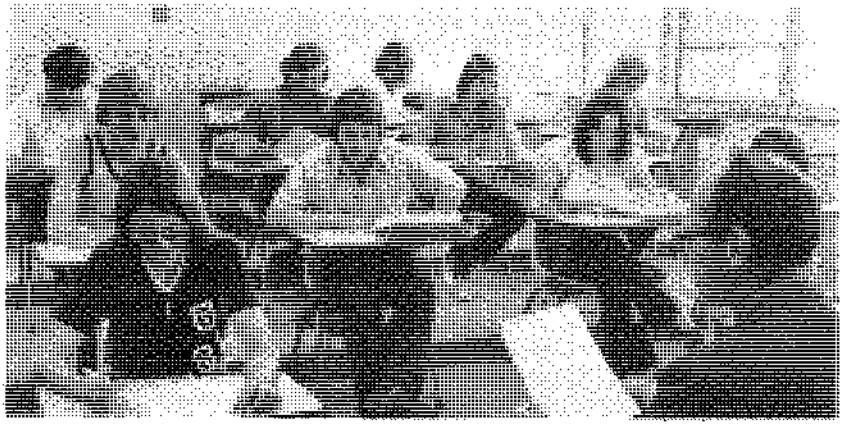
PHYS 249 INDEPENDENT STUDY IN PHYSICS **FWS 2 hrs.**
See Independent Study course description under PHYS 248.

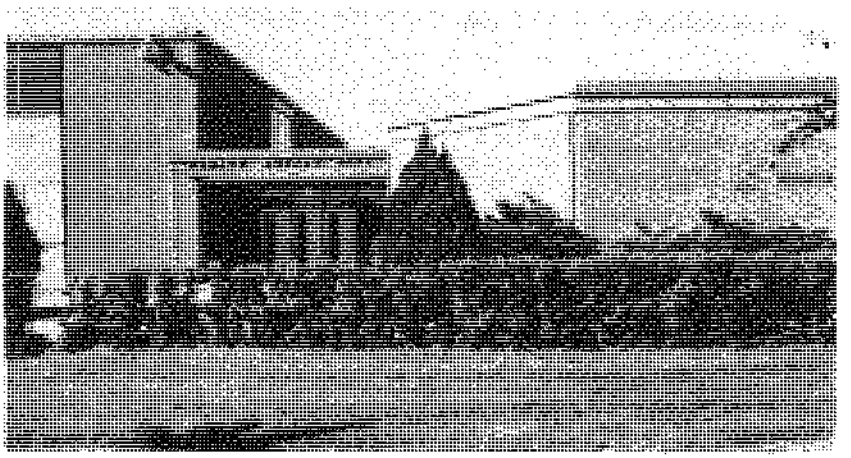
PHYS 251, 252, 253 ENGINEERING PHYSICS **FWS 4 hrs.**
A beginning physics course for science and engineering majors. Mechanics, electricity, magnetism, thermodynamics, sound, and optics are introduced. The calculus and vectors are employed throughout. Principles and mathematical models are emphasized and problem-solving is used to determine progress. Should be taken in sequence. Corequisite: MATH 152 or higher. Four lecture-recitation sessions per week.

PHYS 251L, 252L, 253L ENGINEERING PHYSICS LABORATORY **FWS 1 hr.**
Classical experiments in mechanics, electricity, magnetism, thermodynamics, sound, and optics. Should be taken in sequence. One three-hour session per week.

PHYS 264 MODERN PHYSICS **W 4 hrs.**
An introduction to special relativity, quantum physics, nuclear physics, and solid state physics. Prerequisite: PHYS 253. Four lecture-discussion sessions per week.

PHYS 264L MODERN PHYSICS LABORATORY **W 1 hr.**
Experiments related to the topics covered in the lecture class. One three-hour session per week.





Division of Social Science

Courses offered by the Division of Social Science are designed to accomplish the following:

1. *In subject matter areas not included among the baccalaureate degree offerings of this Division, to offer courses designed to prepare students for more advanced work in upper division courses to be taken at other colleges and universities.*
2. *To meet the subject matter needs of students enrolled in one of the technical or vocational programs offered by the college.*
3. *To prepare students with necessary undergraduate work in the fields of psychology and sociology that they may undertake graduate work in these areas.*
4. *To prepare students for entry into the job market as paraprofessionals in the human services.*
5. *To help prepare all students for more active and intelligent roles as citizens in their respective communities.*

The Division of Social Science offers the following academic programs:

1. *The Associate in Arts Transfer Program (two years)*
2. *The Bachelor of Arts Program in Human Services with the following options:*
   - *A. The Pre-professional Option in Psychology/Sociology*
   - *B. The General Social Science Option*
   - *C. The Human Services Paraprofessional Option*

Donald A. MacKendrick, Division Chairman

Arosteguy, Fink, J. Harper, Hightower, Holloway, Jones, Leinhardt, Meeker, Morton, Nicholson, Perry, Roberts, Starbuck, Tiemann, Wignall.

THE ASSOCIATE IN ARTS TRANSFER PROGRAM

The Associate in Arts Transfer Program is designed to serve the needs of students who wish to obtain a basic, two-year, lower-division course of study in some academic area not presently offered at Mesa College at the baccalaureate-degree level, and then transfer to some other college or university for completion of a baccalaureate degree.

These programs are based upon fifty years of experience by Mesa College in lower-division education specifically designed for transfer. The prestige of Mesa College in quality transfer education assures that students may transfer to virtually any institution of higher education in the United States, smoothly and without loss of credit, provided the student follows an advised course of study.

Students who elect this program should work closely with their faculty advisers in designing a course of study and should determine at the earliest possible date the institution to which they plan to transfer.

At present, the Division of Social Science offers the Associate in Arts degree in the following areas:

Anthropology	History
Economics	Political Science
Ethnic Studies	Pre-Law
General Social Science	Social Science Education
Geography	

Students interested in any of the above areas are urged to write directly to the Division of Social Science, Mary Rait Hall, Room 306, for details, course requirements and preregistration advising.

THE BACHELOR OF ARTS PROGRAM:

General Education Requirements for the Bachelor of Arts Program

(To be completed during the first two years of study)

Psychology or Biological Science	9 hours
Physical Science	9 hours
Humanities	9 hours
Social Science	9 hours
English Composition	9 hours
Physical Education	3 hours

1. The Pre-professional Option in Psychology/Sociology

This course of study is designed to serve the needs of students wishing to pursue a professional career in the field of psychology, sociology or social work. Since such professions normally require graduate study, it is the intent of this program to prepare students for graduate school.

Specific Course Requirements for the Pre-Professional Option in Psychology/Sociology

PSY 121, 122, 123, General Psychology	9 hours
SOC 261, 262, General Sociology	6 hours
ANTH 101, 102, 103, Introduction to Anthropology	9 hours
HS 301 Introduction to Human Services	3 hours
PSY 320, Social Psychology	3 hours
STAT 200 Introduction to Probability and Statistics	5 hours
PSY 400 Tests and Measures	3 hours
SOC 410 Contemporary Social Thought	3 hours
PSY 340 Abnormal Psychology	3 hours
SOCS 310 Methods of Social Research	3 hours

Recommended Courses:

PSY 330, Adolescent Psychology	3 hours
SOC 400, Crime and Delinquency	3 hours
SOC 325, Sociology of Religion	3 hours
SOC 350, Thanatology	3 hours
SOC 320, Political Sociology	3 hours
SOC 330, Cultural and Racial Minorities	3 hours
PSY 310, Child Psychology	3 hours
HS 401, 402, 403, Special Studies	6-18 hours
PSY 350, Psychology of Old Age	3 hours
STAT 325, Statistics/Applications of Social Studies and Psychology	3 hours

Electives to bring total course work to 183 hours, 45 hours of which must be at the upper division level.

2. The General Social Science Option

This option is intended for the student who expects to seek employment upon receiving the baccalaureate degree, though entrance into a graduate or professional course of study is not precluded. Students pursuing this option are encouraged to develop, with the aid of a faculty adviser, a course of study that combines a good foundation in the social sciences with a number of skill courses in order to enhance employment opportunity. These skill courses may be in the field of social science or in other fields, such as business, art, vocational-technical, etc. It is assumed that employment opportunities will be available to graduates of this option in government, public relations, business, law enforcement and other fields where an understanding of human beings and human institutions is highly desirable if not required.

Specific Course Requirements in the General Social Science Option

1. At least two 9-hour lower-division social science series courses (exclusive of General Education courses).
2. HS 301, Introduction to Human Services (3 hours).
3. At least 45 hours of upper-division courses, 24 of which must be in the social science area.
4. Electives to bring total course work to 183 hours.
5. Seventy-eight hours of credit must be earned following the declaration of a major in this option, and these credits must be earned pursuing a plan proposed by the student and approved by his/her faculty adviser.

3. The Para-professional Option in Human Services

The intent of this program is to equip persons with knowledge and helping skills that will qualify them for work as para-professionals in (or with) crisis clinics, centers for the aging, youth shelters, detention homes, foster homes, schools, etc., under the supervision of professional psychologists, psychiatrists, and sociologists. Students electing this option will be encouraged to obtain practical, on-the-job internship type training in conjunction with their formal classroom studies.

Specific Course Requirements for the Para-professional Option in Human Services:

PSY 121, 122, 123, General Psychology	9 hours
SOC 261, 262, General Sociology	6 hours
ANTH 101, 102, 103, Introduction to Anthropology	9 hours
HS 301, 302, 303, Introduction to Human Services	9 hours
PSY 320, Social Psychology	3 hours
PSY 340, Abnormal Psychology	3 hours
STAT 200, Introduction to Probability and Statistics	3 hours
PSY 400, Tests and Measures	3 hours
SOC 410, Contemporary Social Thought	3 hours
*HS 400, 401, 402, Special Studies	6-18 hours

Electives to bring the total course work to 183 hours, 45 of which must be at the upper division level.

**Also see "Credit Outside Formal Course Work" below.*

Credit Outside Formal Course Work

1. Credit in some courses may be assigned by successful completion of appropriate CLEP examinations.

CLEP examinations are now available in the following areas: Afro-American History (HIST 135); American Government (POLS 101, 102, 103); American History (HIST 131, 132, 133); Introductory Economics (ECON 201, 202, 203); Educational Psychology (PSY 254); Human Growth and Development (PSY 133); Money and Banking (ECON 310); General Psychology (PSY 121, 122, 123); Introductory Sociology (SOC 261, 262); Western Civilization (HIST 101, 102, 103).

2. In certain cases credit may be awarded for psychology/sociology experience in the "helping services" for fulfilling requirements in the Para-professional Human Services Option.

Students wishing additional information on credit by examination or experience credit should write directly to the Social Science Division, Mary Rait Hall, Room 306.

Independent Study

In some areas students may obtain credit for research projects, intensive reading programs and other creative endeavors undertaken on an individual basis. Such activities are limited to advanced and serious students and are subject to review on an individual basis. No more than three hours of independent study will be accepted in an Associate degree program and no more than nine hours in a Baccalaureate degree program. See individual Independent Study courses for prerequisites.

Anthropology

ANTH 101, 102, 103 INTRODUCTION TO ANTHROPOLOGY **FWS 3 hrs.**

An introductory survey of the basic concepts of anthropology, including the biological nature of man, the evolution of man, race, and the development and history of culture.

ANTH 221 OLD WORLD ARCHAEOLOGY **F 3 hrs.**

A survey of the archaeology of Eurasia and Africa with emphasis on the emergence and spread of early man on his scientific and technologic advances up to and including the Iron Age. Basic archaeologic concepts such as excavation procedures and modern dating methods are discussed.

ANTH 222 NEW WORLD ARCHAEOLOGY **W 3 hrs.**

A survey of archaeology of North, Middle and South America emphasizing origin of inhabitants, distribution of sites, changes in tools, and scientific achievements. The first portion of the course deals primarily with Paleo-Indian Traditions and the latter portion with the Inca, Mayan and Aztec Civilizations.

ANTH 223 SOUTHWESTERN ARCHAEOLOGY S 3 hrs.
A survey of archaeology of the American Southwest. The course is designed to acquaint the student with the principal pre-Columbian peoples of this region, their origins, distribution, and technological achievements.

ANTH 251 INDEPENDENT STUDY (ANTHROPOLOGY) F, W, or S 1 hr.

ANTH 252 INDEPENDENT STUDY (ANTHROPOLOGY) F, W, or S 2 hrs.
Prerequisites: nine hours of Anthropology, sophomore standing and permission of instructor.

ANTH 261, 262 ARCHAEOLOGICAL EXCAVATION Smr 4-12 hrs.
Training in archaeological field methods, including excavations of prehistoric sites, record-keeping, care of artifacts, mapping, and analysis of data. A three-week field course. Prerequisite: consent of instructor.

ANTH 301 THE NORTH AMERICAN INDIAN S 3 hrs.
A general survey of the cultural system of the North American Indians; major cultural areas, languages and behavior patterns. Case studies of selected groups. Prerequisites, ANTH 101, 102, 103.

Economics

ECON 201, 202 203 PRINCIPLES OF ECONOMICS FWS 3 hrs.
An introductory analysis of American capitalism, national income, government and fiscal policies, money, banking and monetary policies, the economics of the firm, international economic policies, competitive economic systems, and some current domestic and international economic problems. Not open to freshmen. Must be taken in sequence. ECON 201 is prerequisite to ECON 202; ECON 201 and 202 are prerequisite to ECON 203.

ECON 301 LABOR-MANAGEMENT RELATIONS F 3 hrs.
A study of the organized labor movement, employer labor policies, the collective bargaining process, wages and wage regulations, social insurance, and public labor policy. Prerequisite ECON 201, 202, 203 or equivalent. Counts as a Management course for Management majors and minors.

ECON 310 MONEY AND BANKING S 3 hrs.
A study of monetary, credit and banking systems in the United States. Prerequisite: ECON 201, 202, 203 or equivalent. Counts as a Management course for Management majors and minors.

ECON 351 INDEPENDENT STUDY (ECONOMICS) F, W, or S 1 hr.

ECON 352 INDEPENDENT STUDY (ECONOMICS) F, W, or S 2 hrs.
Prerequisites: 12 hours of economics and permission of instructor.

ECON 401 GOVERNMENT AND BUSINESS F 3 hrs.
A study of the relationships between government policies and the conduct of business with special emphasis on small business operations. Prerequisite: ECON 201, 202, 203 or equivalent. Counts as a Management course for Management majors or minors.

ECON 410 PUBLIC FINANCE W 3 hrs.
A study of the revenue and expenditure policies of federal, state and local governments and their relation to the national economy. Prerequisite: ECON 201, 202, 203 or equivalent. Counts as a Management course for Management majors or minors.

ECON 420 INTERNATIONAL ECONOMICS S 3 hrs.
An introductory study of international trade theory and policy including balance of payments analysis, international investment flows and the position of the dollar in foreign exchange transactions. Prerequisite: ECON 201, 202, 203 or equivalent.

Geography

GEOG 101, 102, 103 INTRODUCTION TO GEOGRAPHY FWS 3 hrs.
This course is a basic survey of essentials of college geography, including vocabulary, basic principles and techniques.

GEOG 251 INDEPENDENT STUDY (GEOGRAPHY) F, W, or S 1 hr.

GEOG 252 INDEPENDENT STUDY (GEOGRAPHY) F, W, or S 2 hrs.
Prerequisites: nine hours of geography, sophomore standing and permission of instructor.

with Don MacKendrick's okay

History

HIST 101, 102, 103 WESTERN CIVILIZATIONS FWS 3 hrs.
The political, economic, social, cultural, and military history of western mankind from ancient to modern times.

HIST 104, 105, 106 HISTORY OF EASTERN CIVILIZATION FWS 3 hrs.
A survey of the history of the Asian world both before and after Western penetration.

HIST 120 HISTORY OF COLORADO F, W, or S 3 hrs.
A survey of the history of Colorado from pre-historic times to the present.

HIST 121 HISTORY OF CONTEMPORARY CHICANO S 3 hrs.
An historical approach to the investigation of the Chicano heritage including an analysis of social, political, cultural and intellectual experiences of the contemporary Chicano.

HIST 124, 125, 126 HISTORY OF LATIN AMERICA FWS 3 hrs.
A survey of the history of Latin America from pre-Columbian times to the present.

HIST 131, 132, 133 UNITED STATES HISTORY FWS 3 hrs.
A survey course in the history of the United States from the Colonial period to the present.

HIST 135 AFRO-AMERICAN HISTORY F, W, or S 3 hrs.
A history of the Black American from beginnings in Africa to the present.

HIST 251 INDEPENDENT STUDY (HISTORY) F, W, or S 1 hr.

HIST 252 INDEPENDENT STUDY (HISTORY) F, W, or S 2 hrs.
Prerequisites: 9 hours of history, sophomore standing and permission of instructor.

HIST 301 HISTORY OF ENGLAND W 3 hrs.
A survey of English history from ancient times to the opening of the modern period with an emphasis on the social and cultural development of English civilization.

HIST 310, 311, 312 TOPICS IN THE HISTORY OF AMERICAN POPULAR CULTURE S 2 hrs.
An interdisciplinary approach to the study of American culture. Special topics selected by historical periods, with emphasis on the culture of the folk as reflected in popular literature, song, art, entertainment, sports, living conditions, moods heroes, religion, etc.

HIST 320 HISTORY OF THE SOUTHWEST F 3 hrs.
A history of the Borderlands (Northern Mexico and Southwestern United States) from the 16th century to 1912 with special attention to the interrelationships among Indian, Spanish, Mexican and Anglo-American influences.

HIST 330 THE RUSSIAN REVOLUTION AND THE SOVIET REGIME S 3 hrs.
A history of Russia since 1917, with emphasis on the revolution, the rise of communism and the political, economic, social and ideological development of the Soviet state in the 20th century. Recommended prerequisites: History of Western Civilization (modern period) or admission by instructor.

HIST 340 NINETEENTH CENTURY EUROPE W 3 hrs.
History of Europe from the Congress of Vienna (1814) with emphasis on the unification of Germany and Italy, the alliance systems prior to World War I, and the rise of Marxism and Imperialism. Recommended prerequisites: HIST 101, 102.

HIST 401 CLASSICAL CHINA F 3 hrs.
A study of Confucian China and its institutions.

HIST 402 IMPERIAL CHINA W 3 hrs.
The mid-period in Chinese history from the Mongol conquest to the opening phases of Western penetration.

HIST 403 MODERN CHINA S 3 hrs.
China under assault from Western economic, military and social currents; the rise of nationalism and the evolution of the Chinese communist movement into the Chinese Peoples' Republic.

Human Services

HS 301, 302, 303 INTRODUCTION TO HUMAN SERVICES FWS 3 hrs.
An introductory survey of a wide range of material related to providing human services. Basic observation, interviewing and counseling techniques will be examined. Biological, psychological, and sociological bases of normal and abnormal behavior will be surveyed, and some techniques of behavioral change will be considered. Prerequisites: PSY 121, 122, 123, SOC 261, 262, 263; junior status or permission of the instructor.

HS 310 SEX ROLE IDENTIFICATION AND HUMAN SEXUALITY **W 3 hrs.**
An interdisciplinary approach; physiological differences; sex role differences (stereotypes); trends in human sexuality and morality; cross-cultural comparisons of attitudes toward sexuality, pornography; and some discussion of sexual deviance.

HS 401, 402, 403 SPECIAL STUDIES **FWS 6-18 hrs.**
Independent study of topics mutually agreeable to student and instructor. The course may be used to pursue individual interests or to gain knowledge of materials not otherwise within the curriculum. Human Services majors will be granted academic credit for senior-year internships through registration in this course. Prerequisites: HS major; senior status or permission of instructor.

Interdisciplinary Study

INDI 411 SAN JUAN SYMPOSIUM **Smr 9 hrs.**
An interdisciplinary course involving the study of regional biology, geology and history, combining classroom study on campus with field study in the San Juan Mountains of Colorado.

Political Science

POLS 101, 102, 103 AMERICAN GOVERNMENT **FWS 3 hrs.**
A course which treats the framework and functions of the national government with some attention to both state and local governments.

POLS 251 INDEPENDENT STUDY (POLITICAL SCIENCE) **F, W, or S 1 hr.**

POLS 252 INDEPENDENT STUDY (POLITICAL SCIENCE) **F, W, or S 2 hrs.**
Prerequisites: nine hours of political science and permission of instructor.

POLS 253 PHILOSOPHY OF AMERICAN DEMOCRACY **W 3 hrs.**
A course which deals with significant issues in the contemporary political culture.

POLS 254 STATE AND LOCAL GOVERNMENTS **F 3 hrs.**
A course dealing with the development, organization and operation of state and local governments in the United States. Prerequisites: Political Science 101, 102, 103.

POLS 261, 262, 263 COMPARATIVE GOVERNMENTS **FWS 3 hrs.**
An introduction to comparative politics emphasizing the political systems of Great Britain, France, Germany, the Soviet Union, and the developing nations.

POLS 301 THE WASHINGTON SEMINAR **F 18 hrs.**
Seminar-internship conducted in Washington, D.C., in cooperation with the Washington Center for Learning Alternatives. Students do formal academic study in conjunction with intern assignments with congressional offices, executive agencies, and the Justice Department.

Psychology

(Psychology courses do not fulfill Social Science requirements in the various degree programs.)

PSY 121, 122, 123 GENERAL PSYCHOLOGY **FWS 3 hrs.**
A course designed to give students a fundamental understanding of the causes and methods of behavior, and to give them practical suggestions for the control and improvement of their own lives.

PSY 133 HUMAN GROWTH AND DEVELOPMENT **FWS 3 hrs.**
Designed to assist the student in understanding the psychological and physiological development of the individual from conception through the period of old age. Intended for students enrolled in Associate Degree programs. Other students should enroll in PSY 310, 330, and 350.

PSY 200 MENTAL HYGIENE **F 3 hrs.**
A study of the problems of behaviorally defining mental health, and of the strategies an individual may use in the pursuit of it. The course is especially recommended for students who need an introduction to the field of abnormal psychology that emphasizes the prevention of serious problems through personal understanding. Prerequisites: PSY 121, 122, 123 or permission of the instructor.

PSY 254 EDUCATIONAL PSYCHOLOGY **S 5 hrs.**
The psychological principles underlying the social, emotional and intellectual development of the child as these relate to educational theory and practice. It is recommended that those students who are primarily interested in education take this course as a continuation of PSY 121 and 122, which are prerequisites.

PSY 310 CHILD PSYCHOLOGY **F 3 hrs.**
A study of the individual from the prenatal period to the early stages of his adolescent development. The study will include (1) the stages of growth and maturation (2) the effects of environmental influences upon the child, and (3) the psychological and social interactions between the child and other members of society. Prerequisites: PSY 121, 122 and 123.

PSY 312 EXPERIMENTAL PSYCHOLOGY **S 3 hrs.**
An examination and comparison of research designs and methodologies employed by contemporary psychologists. Students gain experience in planning, conducting, and interpreting original research. Prerequisites: PSY 121, 122, 123.

PSY 314 PSYCHOLOGY OF LEARNING **W 3 hrs.**
A study of classical and modern psychological explanations of the phenomenon of learning at both the human and lower-animal level. Prerequisites: PSY 121, 122, 123.

PSY 320, 321 SOCIAL PSYCHOLOGY **FW 3 hrs.**
Study of the extension of principles of general psychology to behavior within social situations. Attitude formation and change, collective behavior, communication, interpersonal perception, group dynamics, leadership, and propaganda will be examined. Prerequisites: PSY 121, 122, 123, junior status or permission of the instructor.

PSY 322 MOTIVATION **F 3 hrs.**
An examination of classical and contemporary psychological explanations of the forces that originate, direct, and sustain behavior. Prerequisites: PSY 121, 122, 123.

PSY 330 ADOLESCENT PSYCHOLOGY **W 3 hrs.**
A study of the physical, mental and emotional characteristics of the adolescent. The course will include a consideration of the problems that are typical of the adolescent age group. Prerequisites: PSY 121, 122 and 123.

PSY 332 INDIVIDUAL AND GROUP DIFFERENCES **S 3 hrs.**
A study of some measurable similarities and differences in intelligence, aptitude, achievement, and personality, including those between the sexes and among racial groups. Implications of measured differences for societal decisions regarding education and employment will be examined. Prerequisites: PSY 121, 122, 123.

PSY 340 ABNORMAL PSYCHOLOGY **W 3 hrs.**
A systematic presentation of the concepts related to psychopathology and personality disorders with special emphasis given to functional causation and general psychological theory. Behavior deviation patterns are described and illustrated. Prerequisites: PSY 121, 122 and 123.

PSY 350 PSYCHOLOGY OF OLD AGE **S 3 hrs.**
A survey of the problems of aging including the physiological, social, and psychological perspectives. Emphasis will be placed on adequate planning for the retirement years. Prerequisites: PSY 121, 122 and 123.

PSY 351 INDEPENDENT STUDY (PSYCHOLOGY) **F, W, or S 1 hr.**

PSY 352 INDEPENDENT STUDY (PSYCHOLOGY) **F, W, or S 2 hrs.**
Prerequisites: 12 hours of psychology and permission of instructor.

PSY 400 TESTS AND MEASUREMENTS **F 3 hrs.**
An introduction to the theory, problems, methods and content of psychological measurement. The course deals with the basic concepts of the purpose of testing, test administration scoring, standardization, reliability, validity and test evaluation. Some of the principal tests in use today will be studied. Prerequisites: PSY 121, 122, 123, STAT 200.

PSY 412 ORGANIZATIONAL PSYCHOLOGY **W 3 hrs.**
A study of the application of psychological principles to formal, productive organizations such as businesses, governments, schools, etc. Personnel selection, placement, training and evaluation, motivation to work, job satisfaction and morale are examined. Prerequisites: PSY 121, 122, 123.

PSY 414 HISTORY OF PSYCHOLOGY **S 3 hrs.**
A brief review of the philosophical bases of Western psychological thought, and a detailed study of key issues, theories, and methods of psychology prior to 1960. Mainly intended for those majoring in psychology and other behavioral sciences. Prerequisites: PSY 121, 122, 123.

PSY 420 PERSONALITY **S 3 hrs.**
A study of personality theories from the time of Freud through the present day, with emphasis given to the development and functioning of the normal personality. Prerequisites: PSY 121, 122, 123.

PSY 422 SENSATION AND PERCEPTION **F 3 hrs.**
An examination of classical and contemporary theories of the reception, organization, and interpretation of stimuli, especially within the visual and auditory systems. Prerequisites: PSY 121, 122, 123.

Social Science

SOCS 101 INTRODUCTION TO SOCIAL SCIENCE—SOCIOLOGY **F 3 hrs.**
An introduction to the fields of anthropology and sociology. Intended primarily for vocational-technical students. Other students should enroll in SOC 261, 262.

SOCS 102 INTRODUCTION TO SOCIAL SCIENCE—GOVERNMENT **S 3 hrs.**
A survey of government. Intended primarily for vocational technical students. Other students should enroll in POLS 101, 102, 103.

SOCS 103 INTRODUCTION TO SOCIAL SCIENCE—ECONOMICS **W 3 hrs.**
An introduction to the field of economics. Intended primarily for vocational technical students. Other students should enroll in ECON 201, 202, 203.

SOCS 148 EXPLORATORY STUDY IN THE SOCIAL SCIENCES **F, W, or S 1 hr.**

SOCS 149 EXPLORATORY STUDY IN THE SOCIAL SCIENCES **F, W, or S 2 hrs.**
All freshman and sophomore students who desire to explore areas of interest, such as history, political science, sociology, psychology, etc., will be assigned to an "on the job" work experience in such places as the elementary schools, municipal and county offices, state home, mental health clinics, etc. It is expected that the students will arrange their own time and work on the job two hours for each hour enrolled.

SOCS 201 INTRODUCTION TO RELIGION **S 3 hrs.**
This transdisciplinary course introduces the student to the field of religion. Topics to be covered are: the religious impulse; types of religious experience; the religious influence on Western civilization; the Western-Eastern religious problem; the secular-religious problem; the American Civic Religion; contemporary trends in religion. Attention will be given to the Jesus, Charismatic Renewal, Catholic reform and neo-Oriental movements. Sophomore status or instructor's permission.

SOCS 310 METHODS OF SOCIAL RESEARCH **F 3 hrs.**
An introductory course in research methods and their application to the social sciences. Prerequisites: PSY 121, 122, 123 or SOC 261, 262.

SOCS 321, 322 CONTEMPORARY ISSUES IN RELIGION **W 3 hrs.**
Under the above general title, courses will be offered on various current topics in religion. Specific topical descriptions will be provided by the course instructor.

SOCS 351 HISTORY OF IDEAS IN THE SOCIAL SCIENCES: ANCIENT AND MEDIEVAL PERIODS **W 3 hrs.**
Development of major ideas of man and society in Ancient Greece and Rome with attention to social conditions influencing their development and transmission into the social thought of Medieval Europe.

SOCS 352 HISTORY OF IDEAS IN THE SOCIAL SCIENCES: MODERN PERIOD **S 3 hrs.**
Emergence of the Idea of Progress, a set of ideas which underlie the various social sciences, including history writing. Critique of the effectiveness of these ideas for a social science capable of meeting the problems of modern society. Prerequisite: SOCS 351.

Sociology

SOC 144 MARRIAGE AND THE FAMILY **F, W, or S 3 hrs.**
The development of marriage and the family in various selected cultures from primitive times to date; an examination of the important aspects of courtship and marriage; contemporary marital and domestic problems; changing functions of the family, efforts at stabilization, and the problem of adjustment to a changing society.

SOC 261, 262 GENERAL SOCIOLOGY **F, W 3 hrs.**
A survey of concepts in the study of sociology to acquaint students with the terminology, basic principles, and important theoretical concepts. The two quarters should be taken consecutively and SOC 261 is prerequisite to SOC 262.

SOC 263 SOCIAL PROBLEMS **S 3 hrs.**
Introductory approach to some of the major social problems of the modern world, including crime, poverty, divorce, disease, mass conformity, political apathy, sub-standard housing, and mental health. Prerequisite: SOC 261 and SOC 262.

SOC 312 COLLECTIVE BEHAVIOR AND POPULAR CULTURE W 3 hrs.
An inquiry into the dynamics of forming new social structures, with emphasis on contrasting popular cultures and their structures with collective behavior models of the study area. Prerequisites: SOC 161, 162.

SOC 314 DEMOGRAPHY AND POPULATION S 3 hrs.
A survey of problems and theories of population growth, industrialization, and urbanization; the social and psychological factors involved in population dynamics and ecology. Effort will be made to acquaint students with resource materials and tools for analysis of population, population planning, and public policies. Prerequisites: SOC 161, 162.

SOC 320 POLITICAL SOCIOLOGY W 3 hrs.
An interdisciplinary approach to the interactions and interrelationships between social and political forces. Attention is given to the insights of important political sociologists such as Mannheim, Mills, Apter, Lipset and Kornhauser. The focus is on the America of the 1970s. SOC 261, 262 or the instructor's permission are prerequisites.

SOC 325 SOCIOLOGY OF RELIGION F 3 hrs.
This interdisciplinary offering is a scientific study of religion, particularly in the context of modern culture. Attention is given to important social thinkers such as Durkheim, Weber, Marx, Troeltsch, R. H. Niebuhr and Yinger. Prerequisites: junior status or the instructor's permission, and SOC 261, 262.

SOC 330 CULTURAL AND RACIAL MINORITIES S 3 hrs.
The analysis of minority group processes in terms of race, caste, class, ethnicity, politics, religion, with an emphasis on the application of social interaction, anthropological theories of race, and social pyschological theories of prejudice. Prerequisites: SOC 261 and 262.

SOC 340 SOCIAL DISORGANIZATION F 3 hrs.
A survey of social disorganization as a concept—historical and contemporary. Emphasis will be placed on contemporary institutions and their analysis. Prerequisites: SOC 161, 162.

SOC 350 THANATOLOGY S 3 hrs.
A critical review of concepts and findings of social scientists as well as a semi-scientific review of literature dealing with death. Prerequisite: SOC 261 or permission of instructor.

SOC 351 INDEPENDENT STUDY IN SOCIOLOGY F, W, or S 1 hr.

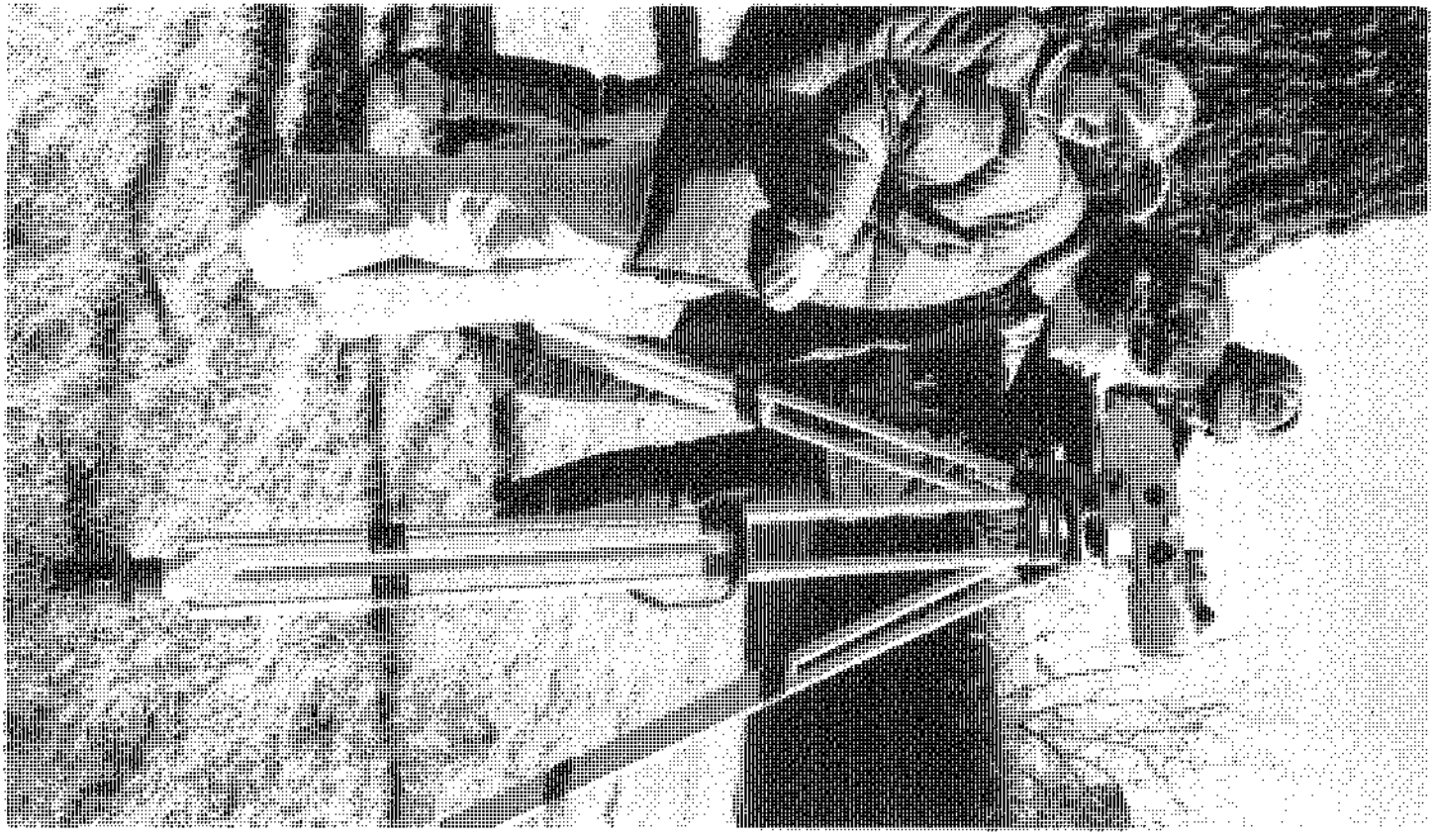
SOC 352 INDEPENDENT STUDY IN SOCIOLOGY F, W, or S 2 hrs.
Prerequisites: twelve hours of sociology and permission of instructor.

SOC 400 CRIME AND DELINQUENCY W 3 hrs.
Study of crime, delinquency and deviance. The social and psychological factors of such behavior, trends in theory, correctional procedures, control, prevention and laws. Prerequisites: SOC 261 and 262.

SOC 410 CONTEMPORARY SOCIAL THEORY W 3 hrs.
Survey of sociological theories with an emphasis on twentieth century contributions. Relationship of sociology to allied fields such as anthropology, psychology, economics and political science. Prerequisites: SOC 261-262.

SOC 412 HISTORY OF SOCIOLOGY F 3 hrs.
A study of the development of sociology as a discipline from early times to the present.

SOC 420 SMALL GROUPS S 3 hrs.
An inquiry into small group processes in schools, peer, reference groups, industry, and other selected institutions; small groups as related to the larger social system; group structure and communications; the dynamics of social interaction. Prerequisites: SOC 261, 262.



Occupational Education

NOTE: As this catalog went to press, Mesa College was in the process of reorganizing its instructional divisions and departments into six different schools. The organizational change will be effective for the 1977-78 academic year and some courses listed in various sections of this catalog may be offered under an instructional unit by another name, but the usefulness of the catalog for planning purposes should not be materially impaired.

Mesa College reserves the right to withdraw from its offerings any course which the enrollment does not justify giving during any particular quarter. Other courses may be added any quarter if there is sufficient demand. In some programs, certain courses may be offered on an alternate-year basis or as determined by demand.

Area Vocational School

Recognizing the national need for better-trained manpower, the Mesa College Area Vocational School provides a large variety of learning opportunities for students who wish to become skilled technicians. Thousands of jobs await those who have the skills and abilities demanded by business and industry.

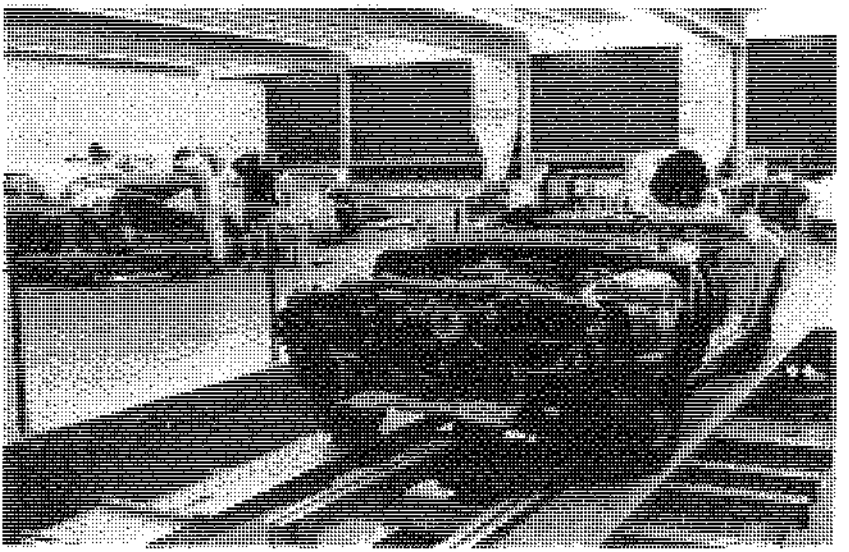
Because the Area Vocational School's clientele represents many ethnic origins, disadvantaged and non-disadvantaged groups, and persons with a wide range of educational backgrounds, the programs and course offerings are structured to provide broad areas of learning opportunities.

The Area Vocational School provides the professional services of a vocational guidance specialist and a job development specialist. With offices located in the Career Information and Planning Center, these counselors are available to assist students with information about vocational training opportunities and to aid them in their plans for employment after completion of their training.

The curriculum of each of the programs described on the following pages is designed to provide job-entry skills even though the student may not complete the program. The further the student progresses in each program, the greater the opportunity for skill development, and upon completion of the curriculum the student reaches the technician level. While the objective of each of the programs is to produce a skilled technician, the Area Vocational School also places emphasis upon general enrichment courses.

The courses and curricula described on the following pages may lead to the Associate in Applied Science or Associate in Science Degree, the Mesa College Diploma, or a Certificate. High school graduates may enroll in any of these programs. High school dropouts and adults who have not completed their secondary requirements may enroll in many of the Area Vocational School offerings.

Students who wish to earn a degree must have a high school diploma or a General Education Development (GED) certificate and must take the tests of the American College Testing (A.C.T.) Program. They must also meet the general requirements and follow the suggested curriculum for the skill training in which they enroll. Students who do not seek a degree may enroll in the individual courses that they desire and for whatever number of credit hours they wish.



Division of Health Programs

NURSING PROGRAMS

Mesa College nursing programs include Associate Degree Nursing and Practical Nursing. The number of students admitted to these programs is limited. Applicants must be in good health, have satisfactory references, and show aptitude for service in the area chosen.

A special admissions committee chooses students for the two nursing programs from applicants who best meet the requirements. Associate Degree applicants should submit all application materials by February 1 in order to be considered for classes starting the following fall. Prospective Practical Nursing students should apply before July 1. Students will be accepted separately for each program.

Eileen M. Williams, Division Chairwoman

Eicher, Goodhart, Lindstrom, Mundy, Mustee, Renner, Schumann, VanderKolk, Wells.

The nursing curriculum is organized so that Practical Nursing (LPN) students and Associate Degree (RN) students are enrolled in the same courses Fall and Winter quarters of the first year. During Spring Quarter, Associate Degree students will take Microbiology (BIOL 253); Practical Nursing students will take Community Nursing (NURS 132) and an English course.

All nursing courses must be completed in sequence as numbered. Upon successful completion of Summer Quarter, Practical Nursing students will be eligible to take state examinations to become licensed practical nurses. A student with passing grades who finds it necessary to withdraw from school at the end of a quarter should be qualified to seek a position as nurses' aide or orderly.

Completion of the Practical Nursing program does not guarantee automatic acceptance into the Associate Degree program.

Since there is a great need for licensed practical nurses, the spaces reserved for these students will be filled by applicants who intend to practice as LPN's.

Practical Nursing

CERTIFICATE

The Practical Nursing program is a 12-month course designed to prepare qualified men and women for service in hospitals and other health agencies as licensed practical nurses. Upon completion of the course, the graduate is qualified to take the licensing examination.

Applicants follow the same procedures as all other Mesa College applicants. Supplementary forms and detailed instructions for making application specifically for Practical Nursing may be secured from the Division of Health Programs.

Associate Degree Nursing

ASSOCIATE IN SCIENCE

Initiated in September 1962, this program is fully accredited by the Colorado Board of Nursing and by the National League for Nursing. Upon completion of the prescribed course of study, the graduate receives the Associate in Science degree and is eligible to take the examination for licensure as a registered nurse. The purpose of this program is to prepare graduates to serve as registered nurses in first-level (staff nurse) positions in hospitals, nursing homes, physicians' offices, and other health agencies where adequate direction is provided.

Laboratory experiences are planned with St. Mary's, Grand Junction Osteopathic, Mesa Memorial, and Veterans Administration hospitals, and other health and welfare agencies in the community.

Students are required to have at least a 2.0 grade average in nursing courses at the end of Spring Quarter of their freshman year and to maintain this average each succeeding quarter in order to continue in the program.

NURSING CURRICULUM

FIRST YEAR

	Qtr. Hrs.	Contact Hrs.
Fall Quarter		
*Fundamentals of Nursing	7	99
Introduction to Nursing	3	33
Anatomy and Physiology	5	77
Nutrition	3	33
	18	242
Winter Quarter		
Maternal-Child Nursing or Medical-Surgical Nursing	12	242
Drugs and Dosage	2	22
Anatomy and Physiology	4	55
	18	319
Spring Quarter		
Maternal-Child Nursing or Medical-Surgical Nursing	12	242
Pharmacology	2	22
**Community Nursing	2	22
**English 110 or 111	3	33
+ Microbiology	5	77
	19	341
	or	**319

SECOND YEAR

	Qtr. Hrs.	Contact Hrs.
Fall Quarter		
English 111	3	33
Physical Education	1	22
Growth and Development or Chemistry	3	33
Advanced Nursing Concepts I	8	198
†Elective (Social Science)	3	33
	18	319
Winter Quarter		
English 112	3	33
Physical Education	1	22
Growth and Development or Chemistry	3	33
Advanced Nursing Concepts II	8	198
†Electives (Social Science)	3	33
	18	319
Spring Quarter		
English 113	3	33
Physical Education	1	22
†Elective (Social Science)	3	33
Advanced Nursing Concepts III	8	198
Trends in Nursing	2	22
	17	308

Summer Quarter

Personal Vocational Relations	3	30
Disaster and Home Nursing	1	10
Clinical Nursing	11	350
Nursing Seminar	1	10
	16	400

(Student is entitled to take licensing examination for LPN after Certificate as practical nurse is earned.)

*Each nursing course includes laboratory (clinical) experience.
**PN students
† ADN students
†Social Science electives: Sociology 261, 262, 263, 144 or other Social Sciences. Nine hours required for graduation

NURS 112 FUNDAMENTALS OF NURSING **F 7 hrs.**
Preparation for use of principles governing procedures and skill in providing care to assist the patient in meeting activities of daily living.

NURS 113 INTRODUCTION TO NURSING **F 3 hrs.**
Orientation to organization of health care facilities, composition and ethical standards of the health team, basic mental and personal health concepts, and the problem-solving approach.

NURS 123 MATERNAL-CHILD NURSING **WS 12 hrs.**
Preparation to care for children from birth through adolescence and the prenatal, natal, and post-partum woman.

NURS 125 DRUGS AND DOSAGE **W 2 hrs.**
Brief history of drugs, guidelines for giving medication, a brief review of arithmetic, terminology, orientation to metric and apothecary systems.

NURS 131 PHARMACOLOGY **S 2 hrs.**
Information about limited specific medication and medicine categories, their uses, effects and side effect on body systems.

NURS 132 COMMUNITY NURSING **S 2 hrs.**
Measures taken by the community, state, and federal governments to maintain and improve the health of the people of the nation.

NURS 134 MEDICAL-SURGICAL NURSING **WS 12 hrs.**
Preparation to care for a variety of patients with the more common medical-surgical conditions of adults.

NURS 141 PERSONAL-VOCATIONAL RELATIONS **Smr 3 hrs.**
Review and greater emphasis on the ethical and legal responsibilities of the nurse. An overview of nursing history is included.

NURS 142 DISASTER AND HOME NURSING **Smr 1 hr.**
Introduction to the concepts of emergency and disaster nursing and the care of the patient in a home situation.

NURS 143 CLINICAL NURSING **Smr 11 hrs.**
Functioning in the role of a licensed practical nurse. Student functions under less direct supervision of instructor and begins to assume the more independent role of working directly on the nursing team under the direction of a team leader.

NURS 144 NURSING SEMINAR **Smr 1 hr.**
Practical nursing student is allowed to correlate and discuss theory and practice pertinent to common nursing problems.

NURS 210 ADVANCED NURSING CONCEPTS I **F 8 hrs.**

NURS 220 ADVANCED NURSING CONCEPTS II **W 8 hrs.**
Provides increased depth of understanding of the human's physiological and psychological adaptative capabilities during the life span.

NURS 230 ADVANCED NURSING CONCEPTS III **S 8 hrs.**
Studies designed to facilitate the transition from student to graduate nurse. Content and experience will be provided in management of larger groups of patients and rural nursing.

NURS 273 TRENDS IN NURSING **S 2 hrs.**
Important components of nursing history and current trends in nursing and health care.

Dental Assisting and Expanded-Function Program

CERTIFICATE

This recently developed five-quarter program prepares the student to perform as an Expanded-Function Dental Auxiliary (EFDA). The curriculum provides flexibility of entry and exit points.

At the end of the first quarter (Dental Aide level) an individual is prepared to:

(1) Perform basic office procedures such as making appointments, doing simple bookkeeping, and maintaining a supply inventory. (2) Greet, seat, drape, and dismiss patient. (3) Sterilize and disinfect instruments and equipment. (4) Prepare dental trays, mix dental materials, process and mount x rays, and prepare study casts.

At the end of an additional six months (Basic Expanded-Function Dental Assistant level — BEFDA) the student is prepared to:

(1) Assist in various chairside procedures for oral surgery, orthodontics, etc. (2) Take radiographs, record medical and dental history and vital signs. (3) Provide appropriate instructions for oral hygiene, post-operative care, etc. (4) Fabricate temporary restoration. (5) Perform basic intra oral function such as polishing restorations, applying topical fluoride, removing sutures and surgical dressings.

At the end of the fifteen-month period an individual is prepared as an Expanded-Function Dental Assistant (EFDA) and is able to:

(1) Perform all duties and functions of the BEFDA. (2) Perform restorative dentistry such as adapt, place and remove temporary restorations (temporary fillings and temporary tooth coverings); and prepare simple and compound amalgams.

For information concerning admission to this program and for additional course information contact the Mesa College Division of Health Programs.

Emergency Medical Technician

CERTIFICATE PROGRAM

Garcia

This standard curriculum has been approved by the National Highway Safety Administration, United States Department of Transportation. Upon satisfactory completion of the course, recommendation of the instructor, and achievement of age 18, the student is eligible to take the examination to be certified as Emergency Medical Technician by the State of Colorado. Students are also eligible to take the national registry examination to become Registered Emergency Medical Technician: Ambulance.

Emergency Medical Technicians enjoy a variety of career opportunities that include ambulance attendants, rescue personnel, industrial safety personnel, and hospital emergency room technicians. Employment opportunities in the immediate area are somewhat limited at this time.

Prerequisites: American National Red Cross First Aid Course, age 18, permission of the instructor.

	Qtr. Hrs.
Fall Quarter	
Emergency Medical Technician I (EMT 141)	3
Winter Quarter	
Emergency Medical Technician II (EMT 142)	3
	6

EMT 141 EMERGENCY MEDICAL TECHNICIAN I **F 3 hrs.**

The EMT role and responsibility, anatomy and physiology, vital signs, physical condition assessment, airway obstruction, pulmonary arrest, mechanical aids to breathing, cardiac arrest, cardiopulmonary resuscitation, bleeding and shock, wounds and bandaging, fractures and splinting. Student spends a minimum of 10 hours working in an emergency room at a local hospital.

EMT 142 EMERGENCY MEDICAL TECHNICIAN II **W 3 hrs.**

Injuries of the head, neck, face and spine, practical lab on handling spine injuries, injuries of the eye, chest and abdomen, Medical Emergencies I, Medical Emergencies II, water safety, childbirth, medical-legal considerations. Lifting and moving patients, auto extrication with field practice, environmental emergencies, crisis intervention, driving an emergency vehicle, radio communications, intravenous therapy. Student spends a minimum of 10 hours working in an emergency room at a local hospital.

Radiologic Technology

ASSOCIATE IN APPLIED SCIENCE

Winklebake

A two-year Associate in Applied Science program which continues through two summers. Admissions are limited because of the number of clinical facilities in the area. A preadmission interview with the director is required. A special admissions committee chooses students who best meet the requirements. Applicants must be in good health and show aptitude for service within the Radiologic Technology field. Both general college and program application forms must be received by the college by Feb. 25 in order for the applicant to be considered for admission. The program starts on the second Monday of each June.

Radiologic technologists enjoy a variety of career opportunities. Most are employed in hospital radiologic departments, where they perform duties of diagnostic x-ray, radiation therapy, and nuclear medicine. Others are employed in physicians' offices, public-health organizations, veterinary clinics, and industrial radiography. Other possibilities include teaching and commercial positions connected with the manufacture, sales and servicing of radiographic equipment.

Students are required to achieve a 2.0 grade average for each RADT course. A cumulative grade-point average of 2.0 is required to continue in the program.

A portion of the clinical experience is obtained in hospitals outside Grand Junction. Students will be responsible for the additional travel and living expenses. At the completion of the 24-month program and with the recommendation of the director, students are eligible to take the national registry examination.

RADIOLOGIC TECHNOLOGY CURRICULUM

FIRST YEAR

	Qtr. Hrs.	Contact Hrs.
Summer Quarter		
Radiologic Orientation (RADT 111)	3	33
Radiologic Electronics (RADT 112)	3	55
English (ENGL 111)	3	33
Physical Education	1	22
Social Science or Psychology	3	33
	13	176
Fall Quarter		
Radiographic Exposures (RADT 121)	3	33
Radiographic Positioning I (RADT 122)	3	55
Human Anatomy and Physiology (BIOL 111)	5	77
English (ENGL 112)	3	33
Medical Terminology (HLTH 147)	3	33
Physical Education	1	22
	18	253
Winter Quarter		
Radiographic Special Procedures (RADT 131)	3	33
Radiographic Positioning II (RADT 132)	4	55
Radiologic Pathology (RADT 133)	2	22
Radiologic Nursing Procedures (RADT 134)	2	22
Human Anatomy and Physiology (BIOL 112)	4	55
Physical Education	1	22
Social Science or Psychology	3	33
	19	242
Spring Quarter		
Radiation Therapy (RADT 141) Lecture	3	33
Radiographic Positioning III (RADT 142)	3	55
Clinical Experience I (RADT 145)	5	110
English (ENGL 115)	3	33
Social Science or Psychology	3	33
	17	264

SECOND YEAR

	Qtr. Hrs.	Contact Hrs.
Summer Quarter		
Radiation Therapy Lab (RADT 141)	2	80
Departmental Admin (RADT 251)	3	33
Advanced Techniques (RADT 252)	3	33
Clinical Experience II (RADT 255)	10	440
	18	586
Fall Quarter		
Nuclear Medicine (RADT 261) Lecture	3	33
Radiation Physics I (RADT 263)	4	44
Clinical Experience III (RADT 265)	10	440
	17	517
Winter Quarter		
Radiologic Fundamentals (RADT 123)	3	33
Nuclear Medicine Lab (RADT 261)	2	80
Radiation Physics II (RADT 274)	4	44
Clinical Experience IV (RADT 275)	10	440
	19	597
Spring Quarter		
Radiologic Review (RADT 281)	4	40
Clinical Experience V (RADT 285)	10	440
	14	480

RADT 111 RADIOLOGIC ORIENTATION **Smr 3 hrs.**
Orientation to the hospital environment, history of radiology and radiologic technology, radiation protection, ethics, and film processing.

RADT 112 RADIOLOGIC ELECTRONICS **Smr 3 hrs.**
Basic physics, electrostatics, a-c and d-c current, control of high voltage, rectification, characteristics of x ray, x-ray circuits, and x-ray tubes. Lab experience in using the x-ray simulator.

RADT 121 RADIOGRAPHIC EXPOSURES **F 3 hrs.**
The theory of x-ray techniques, radiographic quality, radiographic accessories and precautions.

RADT 122 RADIOGRAPHIC POSITIONING I **F 3 hrs.**
Radiography of the chest, abdomen, and extremities. Lecture incorporated with lab using the Alderson Phantom under supervision of the instructor in energized lab.

RADT 123 RADIOLOGIC FUNDAMENTALS **W 3 hrs.**
Theory of basic principles in radiographic production. Body mechanics and patient transportation. Apply knowledge of anatomy and physiology to the production of radiographs. Suitable lab experience under direct supervision of the instructor.

RADT 131 RADIOGRAPHIC SPECIAL PROCEDURES **W 3 hrs.**
Introduces student to mediosurgical diseases and acquaints student with sterile techniques for radiographic surgical procedures. Also acquaints student with specialized and highly technical equipment and procedures in diagnostic radiography including angiography, myelograms, lymphangiograms, etc.

RADT 132 RADIOGRAPHIC POSITIONING II **W 4 hrs.**
Radiography of the shoulder, pelvic girdle, cervical, thoracic, and lumbar spines. Lecture incorporating lab with the Alderson Phantom under supervision of instructor in the energized lab.

RADT 133 RADIOLOGIC PATHOLOGY **W 2 hrs.**
Correlation of disease processes and the resulting radiographs. The theory of repair and regeneration of tissue, formation of tumors both benign and malignant. Survey of disease processes.

RADT 134 RADIOLOGIC NURSING PROCEDURES **W 2 hrs.**
Generalized first-aid course including anaphylactic shock, signs, symptoms, immediate corrective measures. Drugs and contrast media frequently used in the radiographic department that could cause life-threatening problems; corrective measures to save a life. Cardiopulmonary resuscitation. Advanced life support care and routine emergency medical procedures.

RADT 141 RADIATION THERAPY S Smr 5 hrs.
Theory of radiation therapy equipment and operation. Brief psychology of the cancer patient. Radiation physics in dosimetry. Suitable laboratory experience under the direction of the instructor and supervision of a therapy technologist in actual treatment of therapy patients.

RADT 142 RADIOGRAPHIC POSITIONING III S 3 hrs.
Radiography of the skull, including special views of the middle ear, orbits, sinuses, mastoids, etc. Lecture incorporated with the energized lab using the Alderson Phantom under direct supervision of the instructor.

RADT 145 CLINICAL EXPERIENCE I S 5 hrs.
Under direct supervision of a registered technologist, the student should be able to perform all extremity, chest, and abdomen radiographs competently, including paper work.

RADT 251 DEPARTMENTAL ADMINISTRATION Smr 3 hrs.
Instruction in the internal organization and administration of the radiographic department as well as the overall hospital operations. Includes design considerations of a radiographic department, inter- and intra-departmental operations.

RADT 252 ADVANCED TECHNIQUES Smr 3 hrs.
Very discreet theoretical analysis of technique composition including density, contrast, and detail of the radiographs. Generalized film critique.

RADT 255 CLINICAL EXPERIENCE II Smr 10 hrs.
Under direct supervision of a registered technologist the student should be able to perform all shoulder, hip, pelvis, and vertebral examinations properly and to select the proper techniques for each.

RADT 261 NUCLEAR MEDICINE F 3 hrs.
Theory in the medical diagnostic application of radioisotopes. Survey of equipment and materials, including dosages and routes of administration of radioactive isotopes.

RADT 261L NUCLEAR MEDICINE LAB W 2 hrs.
Practical lab experience in the nuclear medicine department and active participation in nuclear scans under direct supervision of the nuclear technologist.

RADT 263 RADIATION PHYSICS I F 4 hrs.
Laboratory experiments designed to develop skills in radiographic techniques, to recognize radiographs below acceptable levels, and to determine proper changes to improve the diagnostic quality of the radiographs.

RADT 265 CLINICAL EXPERIENCE III F 10 hrs.
Under direct supervision of a registered technologist the student performs previous examinations plus routine skull radiographs, special procedures, and surgery radiographs.

RADT 274 RADIATION PHYSICS II W 4 hrs.
A continuation of the laboratory experiments described in RADT 263.

RADT 275 CLINICAL EXPERIENCE IV W 10 hrs.
Under direct supervision of a registered technologist, the student performs previous examinations plus special views of the skull.

RADT 281 RADIOLOGIC REVIEW S 4 hrs.
A general organized comprehensive review of all work completed in the program. Developed as a preparation for the national registry examination.

RADT 285 CLINICAL EXPERIENCE V S 10 hrs.
Continuation of Clinical Experience IV.

Western Health Education Center

Sister Agnes Steiner, Coordinator

St. Mary's Hospital and Mesa College have combined resources to extend educational opportunities to the health personnel and facilities of Colorado West. This joint venture operates as Western Health Education Center with the following goals:

— To provide in-service, upgrading, and continuing education programs in the health field.
— To give recognition to students for their educational pursuits and to enable them to progress in their jobs.
— To provide sufficient numbers of the best-trained personnel possible for the health-service needs of the region.

Students register with Mesa College and may enroll for college credit if they desire.

Division of Trade and Industrial Programs

The Division of Trade and Industrial Programs offers a variety of options in Auto Body and Fender, Auto Mechanics, Electric Lineman, and Welding, each of which prepares students for employment and advancement in some of the nation's most important industries and technologies. The instructional programs include both classroom lecture-discussion and specialized training in well-equipped shops which are supervised by highly skilled personnel.

Harold R. Bollan, Division Chairman

Bronton, Charlesworth, Fasnacht, Fresquez, Hill, Kosten, Rowley, Tyler, R. White

Auto Body and Fender

ASSOCIATE IN APPLIED SCIENCE

At the end of one year a student is awarded a certificate of capability. Upon completion of the requirements set forth in the curriculum, a student receives the Associate in Applied Science Degree. Practical application covers all phases of body and fender repair, including a comprehensive unit in auto painting. Training gives the necessary laboratory skills, knowledge of theory, principles and related subjects essential to enter and progress competitively in the occupation. Students may enter the program any quarter.

Requirements for the Associate in Applied Science degree in Auto Body and Fender include the following:

Vocational Communications	9 hrs.
Social Science	9 hrs.
Physical Education	3 hrs.
Auto Body	66 hrs.
Electives	6 hrs.
Total required for graduation	93 hrs.

AUTO BODY AND FENDER CURRICULUM

FIRST YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Vocational Communications	3	33
Applied Math	3	33
Gen. Auto Body Repair	5	110
Shop Practice	1	22
Physical Education	1	22
Oxyacetylene Welding	3	55
	16	275
Winter Quarter		
Vocational Communications	3	33
Repair and Refinishing	5	110
General Refinishing	4	55
Physical Education	1	22
Auto Reconditioning	3	55
	16	275
Spring Quarter		
Vocational Communications	3	33
Repair and Refinishing II	5	110
Arc Welding	3	33
Physical Education	1	22
Auto Reconditioning	3	55
	15	253

SECOND YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Intro. to Social Science	3	33
Repair and Refinishing III	5	110
Frame Repair	4	55
Panel and Spot Painting	3	55
	15	253
Winter Quarter		
Intro. to Social Science	3	33
Repair and Refinishing IV	5	110
Estimating	2	33
Human Relations	3	33
Frame Repair	2	33
	15	242
Spring Quarter		
Intro. to Social Science	3	33
Repair and Refinishing V	5	110
Shop Management	3	33
Estimating	2	22
Elective	3	33
	16	231

ABF 110 APPLIED MATHEMATICS F 3 hrs.
A brief review of the arithmetic, shop mathematics, and algebra that students will need to handle the mathematical aspects of auto mechanics.

ABF 111 GENERAL AUTO BODY REPAIR F 5 hrs.
An introduction to theory and practices of auto body repair. Basic principles involved are studied and practiced.

ABF 112 SHOP PRACTICE F 1 hr.
General information pertaining to technical aspects. Includes safety practices, tools, and materials. Orientation of student to school rules, regulations and curriculum. Safety practices while training. Type of work encountered in the field.

ABF 113 OXYACETYLENE WELDING F 3 hrs.
The course includes the theory and practice of oxyacetylene welding of mild steel, the identification of base and filler metals and melting temperatures of various metals. Special emphasis is placed on root penetration and fusion of welding materials. If time permits, some brazing and bronze welding of mild steel and cast iron, as used in auto-body repair, will be included. Class: 2 hours. Shop: 8 hours.

ABF 116, 117 AUTO RECONDITIONING WS 3 hrs.
This course affords instruction in new car preparation; glass removal and installation; minor panel repair and refinishing; spot painting; cleaning, dying and repair of upholstery; cleaning and airbrush painting; exterior-finish buffing and polishing; general automotive detail procedures.

ABF 121 GENERAL REFINISHING W 4 hrs.
A comprehensive study of auto refinishing which includes metal conditioners, primers, sealers, surfacers, reducers, thinners, and the different types of paints and the techniques used to apply them.

ABF 124 REPAIR AND REFINISHING I W 5 hrs.
Bench work on auto body parts. Manipulative practice of skills needed to advance in general auto body work with emphasis on auto finishing. Shop: 15 hours.

ABF 132 PANEL AND SPOT PAINTING F 3 hrs.
Paint composition, refinishing products and their correct usage, color matching and procedures to be used in making a lacquer or acrylic spot repair. Class: 3 hours. Shop: 1 hour.

ABF 133 ARC WELDING S 2 hrs.
A beginning course in welding mild steel in down-hand position with electric arc welding equipment. Proper care, use of equipment, and safety precautions and practices are heavily stressed. Shop: 4 hours.

ABF 134 REPAIR AND REFINISHING II S 5 hrs.
Continuation of Repair and Refinishing I. Emphasizes all types of metal work. Includes working with aluminum, galvanized iron, and other metals utilized in auto body work. Shop: 15 hours.

ABF 250 FRAME REPAIR F 4 hrs.

ABF 251 FRAME REPAIR W 2 hrs.
Inspection, measurement and repair methods used to repair unitized and conventional frames. Shop: 10 hours.

ABF 254 REPAIR AND REFINISHING III F 5 hrs.
Continuation of shop learning practices. Severe collision repair procedures are studied. Shop: 15 hours.

ABF 264 REPAIR AND REFINISHING IV W 5 hrs.
Continuation of shop learning procedures. Emphasis on metal work and spot painting. Shop: 18 hours.

ABF 271 SHOP MANAGEMENT S 3 hrs.
Study of shop operation, expenditures, floor-plan design and equipment for the modern-day shop. Expectations and management of employees.

ABF 272 ESTIMATING I W 2 hrs.
Study of parts catalogs, flat rate, R&R procedures, insurance adjustments, and the writing of collision repair bids.

ABF 273 ESTIMATING II S 2 hrs.
A continuation of ABF 272.

ABF 274 REPAIR AND REFINISHING V S 5 hrs.
Concentration of shop and learning experiences in area in which student wishes to specialize. Shop: 15 hours.

Auto Mechanics

ASSOCIATE IN APPLIED SCIENCE

This program is designed to train persons who wish to enter into the automotive service trades including general mechanics, specialists of various types, shop foremen, service managers, service salesmen, instructors, factory service representatives, insurance adjustors and other positions. It provides the necessary foundation upon which students may enter and advance themselves in the automotive trades.

The curriculum is designed in modules of five weeks each except Engines which is ten weeks. Generally there are seven modules offered each quarter and a student may choose any two of these. This system allows anyone interested to enroll for any module and therefore become proficient in one or more aspects of auto mechanics.

Requirements for the Associate in Applied Science degree in Auto Mechanics include the following:

Vocational Communications	9 hrs.
Physical Education	3 hrs.
Engineering Drawing	3 hrs.
Auto Mechanics	66 hrs.
Social Science	9 hrs.
Electives	3 hrs.
Total required for graduation	93 hrs.

AUTO MECHANICS CERTIFICATE

Requirements for a Certificate in Auto Mechanics include: AMEC 111: Applied Math for Auto Mechanics (3 quarter hours, 75 contact hours) plus 63 quarter hours of auto mechanics courses from the following list:

			Qtr. Hrs.	Contact Hrs.
AMEC	110	Beginning Welding for Auto Mechanics	3	30
AMEC	113	Internal Combustion Engines	6	100
AMEC	114	Engine Rebuilding and Repair	12	200
AMEC	121	Clutches, Standard Transmissions and Overdrive	5	75
AMEC	122	Drivelines and Differentials	5	75
AMEC	123	Carburetors	5	75
AMEC	124	Electrical Systems	5	75
AMEC	125	Automotive Brake Systems	5	75
AMEC	127	Automatic Transmissions	5	75
AMEC	130	New Car Preparation	5	75
AMEC	133	Air-Conditioning	5	75
AMEC	135	Suspension and Alignment	12	200
AMEC	136	Ignition Systems	5	75
AMEC	139	Emission Control	5	75

AMEC 110 BEGINNING WELDING FOR AUTO MECHANICS **W 3 hrs.**

A beginning course in gas and arc welding designed to help the auto mechanic develop basic skills for maintenance and repair welding on cars and trucks.

AMEC 111 APPLIED MATH FOR AUTO MECHANICS **F 3 hrs.**

A brief review of the arithmetic, shop math, and algebra that students will need to handle the mathematical aspects of auto mechanics.

AMEC 113 INTERNAL COMBUSTION ENGINES **S 6 hrs.**

A basic study of the internal combustion engines dealing with types, design, construction, principles of operation and application of engine components. Disassembly and assembly of the four-cycle gasoline engine is covered. The measuring of parts and the recognizing of damaged and worn parts are included.

AMEC 114 ENGINE REBUILDING AND REPAIRS **FW 12 hrs.**

A course designed to develop basic skills in the specialized field of automotive engine rebuilding. Includes cylinder reboring, reconditioning of connecting rods, pistons, pins, valve seats and guides, surface grinding, and general engine rebuilding and repair. Prerequisite: AMEC 113.

AMEC 121 CLUTCHES, STANDARD TRANSMISSIONS AND OVERDRIVES **FW 5 hrs.**

This course is designed to give the student a working knowledge of the pressureplate assembly, clutch disk, clutch pedal and linkage, release bearing, pilot bearing, gears, gear ratios and synchromesh transmissions.

AMEC 122 DRIVELINES AND DIFFERENTIALS FW 5 hrs.
This class is a comprehensive study of U-joints, drive shafts, engine mounts, and conventional or limited-slip differentials. Nomenclature, gear and bearing failure, repair, and adjustment of all component parts are included in the instruction.

AMEC 123 CARBURETORS FW 5 hrs.
The chemical properties of fuels, fuel and air ratios, metering, atomizing, vaporizing and mixing are studied. The complete fuel system is thoroughly treated. Single, dual and four barrel carburetors, single and double action fuel pumps of all popular makes are included.

AMEC 124 ELECTRICAL SYSTEMS FW 5 hrs.
Starters, generators, alternators, voltage regulators, solenoids, switches, relays, lights, wiring and cables are thoroughly covered both in theory and practical application. A complete lab on the servicing and adjustment of these units, using the latest equipment, is part of this course.

AMEC 125 AUTOMOTIVE BRAKE SYSTEMS FW 5 hrs.
This is a complete course in the servicing and repair of the hydraulic brake system. Includes the basic principles of hydraulics, servicing the linings, drums, cylinders, lines and power booster units, adjusting and bleeding the system.

AMEC 127 AUTOMATIC TRANSMISSIONS S 5 hrs.
The principles of operation of planetary gear sets, fluid couplings, torque converters, servo bands, clutch packs and control circuits are the main objectives of this course.

AMEC 130 NEW CAR PREPARATION S 5 hrs.
Specialized training in preparation of new cars for sale. Includes information and instruction on catalytic converter, electronic ignitions, seat-belt interlock systems, and other new equipment; also washing, small body adjustments, and chemical cleaning of both inside and outside.

AMEC 133 AIR CONDITIONING S 5 hrs.
This class will cover: an introduction to the principles of refrigeration; the methods of operation and control; assembly of connections and components; proper handling of refrigerants; use of testing equipment; conducting efficiency tests; and general maintenance work.

AMEC 135 SUSPENSION AND ALIGNMENT S 12 hrs.
The theory, function, disassembly, repair and adjustment of the shocks, springs, wheels, tires, axles, suspension, and steering geometry are included in this class. Study and practice of wheel balancing and alignment techniques are included with the diagnosis of alignment problems and the analysis and correction of the tire wearing problems, vibrations, hard steering, pulling, etc.

AMEC 136 IGNITION SYSTEMS FW 5 hrs.
All units comprising the ignition system, consisting of the primary and secondary circuits, are studied here. The distributor and related parts, coil, ignition switch, resistors, spark plugs, cables and wiring, as well as ignition timing are fully covered. All adjustments and service procedures are included.

AMEC 139 EMISSION CONTROL S 5 hrs.
A comprehensive study of emission-control systems dealing with types, design, and principle of operation. Covers the problems encountered with these systems and the necessary adjustments and repairs.

Electric Lineman

ONE-YEAR CERTIFICATE PROGRAM

This program is designed to provide well-trained personnel for electrical service and construction companies. Students receive field training and practical theory in all phases of power-line installation and maintenance. Field training consists of actual job experience in an outdoor school laboratory. It covers climbing, setting and removing various sizes of poles, also guy work, conductors, transformers, streetlights, installation of services, tree trimming, and the use and care of safety equipment.

Related training, conducted in laboratory and classroom, provides ample opportunity for acquaintance with the materials and hardware of the trade and also the theory of their use. Fundamentals basic to the trade are emphasized through classes in electricity, construction techniques, transmission, distribution systems, underground procedures, hot-line, and safety.

Requirements for the one-year certificate include:

No.	Course	Qtr. Hrs.	Contact Hrs.	No.	Course	Qtr. Hrs.	Contact Hrs.
ELIN 111	Applied Mathematics I	5	55	ELIN 136	Related Fundamentals I	4	110
ELIN 112	Applied Mathematics II	3	55	ELIN 137	Related Fundamentals II	4	110
ELIN 120	Fundamentals of Electricity I	4	55	ELIN 138	Related Fundamentals III	4	110
ELIN 121	Fundamentals of Electricity II	3	55	ELIN 140	Underground Procedures	7	165
ELIN 131	Electric Distribution Theory I	4	55	ELIN 145	Hot-Line Procedure	3	30
ELIN 132	Electric Distribution Theory II	4	55	ELIN 150	Applied Theory and Fundamentals I, II, III	15	320
ELIN 133	Electric Distribution Theory III	4	55				

(This program does not operate on the traditional quarter system. Consult the department for starting time of each course.)

ELIN 111 APPLIED MATHEMATICS I **5 hrs.**
A basic review of arithmetic, followed by ratios, percentages and problems in electrical mathematics as encountered by linemen.

ELIN 112 APPLIED MATHEMATICS II **3 hrs.**
Trigonometry, vectors, and electrical mathematics appropriate for the work of linemen.

ELIN 120 FUNDAMENTALS OF ELECTRICITY I **4 hrs.**
A study of how electricity is produced, current magnetic fields, measuring devices, circuits.

ELIN 121 FUNDAMENTALS OF ELECTRICITY II **3 hrs.**
A study of AC circuits, capacitors, alternators, generators, current and voltages.

ELIN 131 ELECTRICAL DISTRIBUTION THEORY I **4 hrs.**
Electrical systems, nomenclature of equipment, pole-setting and framing, hardware, tools and riggings.

ELIN 132 ELECTRICAL DISTRIBUTION THEORY II **4 hrs.**
Stress and strain, splicing, energizing lines, protective grounding conductors and connections.

ELIN 133 ELECTRICAL DISTRIBUTION THEORY III **4 hrs.**
Protective devices, voltage regulation, inspection and testing, preventive maintenance, hot line tools, capacitor installation.

ELIN 136 RELATED FUNDAMENTALS I **4 hrs.**
First aid, safety code, operation of line trucks, record keeping.

ELIN 137 RELATED FUNDAMENTALS II **4 hrs.**
Electric test meters, transformers, national electric safety code.

ELIN 138 RELATED FUNDAMENTALS III **4 hrs.**
Advanced first aid, voltmeters and ammeters, lighting, human relations, watt-hour meters, blasting.

ELIN 140 UNDERGROUND PROCEDURES **7 hrs.**
Terminology, installation, protective equipment switching procedures, maintenance and inspection.

ELIN 145 HOT-LINE PROCEDURES **3 hrs.**
Each student participates in 40 contact hours of overhead hot-line work. Training includes actual job experience in an outdoor school laboratory, enabling student to perform all phases of hot work required by the electrical industry.

ELIN 150 APPLIED THEORY AND FUNDAMENTALS **15 hrs.**
Field Training.

Welding

ASSOCIATE IN APPLIED SCIENCE AND CERTIFICATE PROGRAMS

In addition to the Associate in Applied Science degree, both four-quarter and six-quarter certificate programs are offered. Students who leave the program before completion of the four-quarter sequence will be awarded a certificate of capability. Appropriate certificates or the degree will be awarded upon completion of the longer programs.

The courses are designed to give students the necessary knowledge of metals, layout work and welding processes, along with an opportunity to gain manipulative skills and the related information needed to enter and progress in the welding occupations. Instruction and shop practice are offered in oxyacetylene and electric-arc welding of ferrous and non-ferrous metals in all positions. Students can arrange work experience as part of the regular program after being in the program three quarters or more.

Requirements for the Associate in Applied Science degree in Welding include the following:

Vocational English	9 hrs.
Physical Education	3 hrs.
Engineering Drawing	3 hrs.
Welding	66 hrs.
Social Science	9 hrs.
Electives	3 hrs.
Total required for graduation	93 hrs.

WELDING CURRICULUM

ASSOCIATE IN APPLIED SCIENCE

First Quarter	Qtr. Hrs.	Contact Hrs.
Vocational Communications I	3	33
Welding Laboratory I	7	165
Oxyacetylene and Arc Theory	4	44
Applied Mathematics	3	33
Physical Education	1	22
	18	297
Third Quarter		
Vocational Communications III	3	33
Welding Laboratory III	7	165
Fabrication Layout	3	33
Shop Management and Structural Theory	4	44
	17	275
Fifth Quarter		
Introduction to Social Science II	3	33
Welding Laboratory V	7	165
*Work Experience	7	400
Related Class	3	33
	20	631

Second Quarter	Qtr. Hrs.	Contact Hrs.
Vocational Communications II	3	33
Welding Laboratory II	7	165
Blueprint Reading	3	33
Elective	3	33
Physical Education	1	22
	17	286
Fourth Quarter		
Introduction to Social Science I	3	33
Welding Laboratory IV	7	165
ENGR 105	3	66
Metallurgy	3	33
Physical Education	1	22
	17	319
Sixth Quarter		
Introduction to Social Science III	3	33
Welding Laboratory VI	7	165
*Work Experience	7	400
	17	598

FOUR-QUARTER CERTIFICATE

First Quarter	Qtr. Hrs.	Contact Hrs.
Vocational Communications I	3	33
Welding Laboratory I	7	165
Oxyacetelene and Arc Theory	4	44
Applied Mathematics	3	33
	17	275
Third Quarter		
Welding Laboratory III	7	165
Fabrication Layout	3	33
Metallurgy	3	33
Shop Management and Structural Theory	4	44
	17	275

Second Quarter	Qtr. Hrs.	Contact Hrs.
Human Relations	3	33
Welding Laboratory II	7	165
Blueprint Reading	3	33
Applied Mathematics	3	33
	16	264
Fourth Quarter		
Welding Laboratory IV	7	165
Basic Engineering Drawing	3	66
*Work Experience	7	400
	17	631

SIX-QUARTER CERTIFICATE

Fifth Quarter	Qtr. Hrs.	Contact Hrs.
Welding Laboratory V	7	165
Work Experience	7	400
Related Class	3	33
	*17	598

Sixth Quarter	Qtr. Hrs.	Contact Hrs.
Welding Laboratory VI	7	165
Work Experience	7	400
Related Class	3	33
	*17	598

Available Summer Quarter	Qtr. Hrs.	Contact Hrs.
Welding Laboratory Only	7	165
*Work Experience	14	400
	21	565

**Note: Work experience scheduled after fourth quarter or with approval of the instructor during the summer. Four hours on the job each day for 10 weeks will equate to seven quarter hours of credit. Related class of three quarter hours credit will be offered along with work experience whenever there are seven or more students registered on-the-job.*

WELD 110 WELDING LABORATORY I **FWS Smr 7 hrs.**
Shop practice in safe use of equipment. Oxyacetylene welding for six weeks on mild steel in all positions and beginning arc welding for four weeks.

WELD 112 OXYACETYLENE AND ARC THEORY **F 4 hrs.**
Instruction in the proper care and use of welding equipment, selection of the proper rods and fluxes and safety as it applies to welding and welding equipment. Classroom.

WELD 115 APPLIED MATHEMATICS **FW 3 hrs.**
Basic mathematics, fractions, decimals, percentages and basic algebra, all as applied in industry.

WELD 120 WELDING LABORATORY II **FWS Smr 7 hrs.**
Continuation of arc welding; refining the welding of mild steel in all positions. Prerequisite: WELD 110 or consent of the instructor.

WELD 121 BLUEPRINT READING **W 3 hrs.**
Basic principles of blueprint interpretation and visualization of objects as applied to industry. Also the use and interpretation of welding symbols.

WELD 130 WELDING LABORATORY III **FWS Smr 7 hrs.**
Continuation of WELD 120 with emphasis on low-hydrogen electrode welding techniques. Prerequisite: WELD 120 or consent of instructor.

WELD 131 FABRICATION LAYOUT **S 3 hrs.**
Basic layout techniques from shop drawings to fabrication of sheet metal, plate, pipe and structural shapes.

WELD 141 SHOP MANAGEMENT AND STRUCTURAL THEORY **S 4 hrs.**
Study of shop operation, expenditures, floor-plan design and equipment of modern day shop. The study of codes issued by the American Petroleum Institute, American Welding Society and American Society of Mechanical Engineers as applied to industry.

WELD 145 METALLURGY **S 3 hrs.**
A general study of smelting, refining, and alloying. Discussion and demonstrations of heat-treating methods used to bring about certain desired results in metals, and also the effects of welding on metals.

WELD 240 WELDING LABORATORY IV **FWS Smr 7 hrs.**
TIG welding of stainless steel, carbon steel and aluminum. MIG employing the principle of a consumable wire feed. Repair welding. Prerequisite: WELD 130 or consent of instructor.

WELD 250 WELDING LABORATORY V **FWS Smr 7 hrs.**
Continuation of WELD 240. Advanced welding using American Welding Society, American Society of Mechanical Engineers and American Petroleum Institute codes with covered electrodes, MIG and TIG. Prerequisite: WELD 240 or consent of instructor.

WELD 252 WORK EXPERIENCE **FWS Smr 14 hrs.**
On-the-job training by local companies in fabrication, construction or maintenance welding. Minimum 10 weeks. Prerequisites: WELD 112, 115, 121, 130, 131, 141, 145, ENGR 105, or consent of instructor. Four hours per day for 10 weeks will equate to seven quarter hours credit. Eight hours per day for 10 weeks will equate to 14 quarter hours credit.

WELD 254 RELATED CLASSES (Related to Work Experience) **FWS Smr 3 hrs.**
Classes offered same quarter as work experience, covering problems encountered on the job, such as: interpretation of blueprints and layout, problems with welds and joints, and employee employer relations. Prerequisite: WELD 252 (or concurrent enrollment). Offered only when there are seven or more students on-the-job.

WELD 260 WELDING LABORATORY VI **FWS Smr 7 hrs.**
Pipe welding with covered electrodes, MIG and TIG in all positions; per American Welding Society, American Society of Mechanical Engineers and American Petroleum Institute codes. Prerequisite: WELD 250 or consent of instructor.

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133

Business Occupational Programs

(Offered through the Division of Business)

Accounting

CERTIFICATE

The nine-month curriculum in Accounting is offered for students who wish to develop basic skills in a short-term program. Options for additional training or immediate job entry may be considered upon completion of the program.

ACCOUNTING

(NINE MONTHS)

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Principles of Accounting	5	55
Introduction to Business	3	33
English Composition	3	33
Business Mathematics	4	44
Word Study	2	22
	17	187

Winter Quarter	*Qtr. Hrs.*	*Contact Hrs*
Principles of Accounting	5	55
English Composition	3	33
Speech	3	33
Business Data Processing	3	33
Elective	3	33
	17	187

Spring Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Managerial Accounting or Income Tax	3-5	33-55
English Composition	3	33
Business Communications	3	33
Electives	6	66
	15-17	165-187

Data Processing

Mourey

The electronic data processing field offers a wide diversification of job possibilities for trained personnel. Keypunch operators assist in the preparation of punched cards in which data is originally recorded. Machine operators supervise the operation of the data processing machines. Computer personnel plan the patterns to be followed by the computer to produce many types of information.

CERTIFICATE

The nine month Data Processing curriculum presented below is designed to provide a level of competency necessary for job entry at different levels of the data processing occupations. After the first quarter a student would be employable as a keypunch operator; after the second quarter, as a unit record machines operator; and after completion of the program, as a computer operator. The student will learn the necessary skills to be employable as determined by the job market.

DATA PROCESSING NINE-MONTH PROGRAM

All Students

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Business Data Processing	3	33
Keypunch and Verifier	2	44
English	3	33

Winter Quarter	*Qtr. Hrs.*	*Contact Hrs.*
COBOL I	5	110
Introduction to Business	3	33
Computer Operator	3	44

Spring Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Introduction to Social Science	3	33
Personal Finance	3	33

Accounting Option

Fall Quarter	Qtr. Hrs.	Contact Hrs.
Accounting	5	55
Business Math	4	44

Winter Quarter	Qtr. Hrs.	Contact Hrs.
Accounting	5	55

Spring Quarter	Qtr. Hrs.	Contact Hrs.
Income Tax	3	33
Elective	8	88

SUGGESTED ELECTIVES: Beginning Typing, Reading, English (Spelling), Business Communication, Algebra, Basic Mathematics, Personal Finance, Speech, English Vocabulary, Human Relations, Insurance.

Secretarial Option

Fall Quarter	Qtr. Hrs.	Contact Hrs.
Intermediate Typing	3	33
Shorthand	4	55

Winter Quarter	Qtr. Hrs.	Contact Hrs.
Shorthand	4	55

Spring Quarter	Qtr. Hrs.	Contact Hrs.
Transcription Machine	3	33
Shorthand	4	44
Secretarial Accounting	3	33

SUGGESTED ELECTIVES: Beginning Typing, Reading, Advanced Typing, Algebra, Basic Mathematics, Business Communication, Speech, English (Spelling), Income Tax, Beginning Dictation, Personal Finance, English Vocabulary, Human Relations, Insurance.

ASSOCIATE IN APPLIED SCIENCE

A student at Mesa College will, during the two years of attendance, spend much time working directly on and with the data processing machines including the electronic computer. Problems similar to those of actual business will be solved by the student using IBM machines.

Data Processing technicians are employed by business and industry in the following positions:

Machine Operators
Machine Supervisors
Installation Supervisors
Programmers
Research
Computer Specialists

Students electing the two-year Data Processing program are required to complete the following (any deviation from this program must be approved by student's adviser and the registrar):

English composition, 6 hours and three additional hours of composition or literature; physical education, 3 hours; social science, literature, psychology, or any combination, 9 hours; accounting, 10 hours; college algebra, math foundations of business, and statistics or higher level mathematics approved by adviser, 13 hours; business or accounting, 5 hours; data processing, 30 hours; and electives, 14 hours, for a total of 93 hours.

DATA PROCESSING TWO-YEAR PROGRAM

(Suggested Course Sequence)

FIRST YEAR

Fall Quarter	Qtr. Hrs.	Contact Hrs.
English Composition	3	33
Business Data Processing	3	33
Keypunch and Verifier	2	44
College Algebra I or II	3	44
Physical Education	1	22
Introduction to Business	3	33
	15	209
Winter Quarter		
English Composition	3	33
Principals of Accounting	5	55
Computer Operations	3	44
COBOL I	5	110
	16	242

SECOND YEAR

Fall Quarter	Qtr. Hrs.	Contact Hrs.
Intermediate Accounting II	5	55
Principles of Economics	3	33
Assembler Language	5	110
Physical Education	1	22
	14	220
Winter Quarter		
Computers in Management	4	44
Principles of Economics	3	33
RPG	5	88
Math Foundations of Business	5	55
	17	220

(Sequence continued on next page)

FIRST YEAR (continued)

Spring Quarter		
Intermediate Accounting I	5	55
Introduction to Probability and Statistics	5	55
Physical Education	1	22
COBOL II	5	110
	16	242

SECOND YEAR (continued)

Spring Quarter		
Principles of Economics	3	33
Automated Systems	5	55
Cost Accounting	5	55
Technical Report Writing	3	33
	16	176

See Division of Business section of catalog for Data Processing course descriptions.

Business Job Entry Training

CERTIFICATE

An Occupational Program Designed to Help Students Acquire Skills for Job Competency

Myers

This program is designed for high school drop-outs, high school graduates, and adults who desire to gain skills of typing, shorthand, bookkeeping, and related courses for entry into occupations in business such as bookkeeper, receptionist, file clerk, typist, and stenographer. For students who have a limited academic background, the program provides an opportunity to review and improve before attempting a college-level curriculum.

The program is designed for 11 months' training. No college credit and no grades are given. Students progress at their own rate of speed. Upon leaving the program, the student will be given a certificate stating accomplishments. Classes meet six hours per day, five days per week.

Course material in the Job Entry Training program is programmed so that the student may progress at an individual pace. A block of material is learned; the student is tested and then reworks the material or related material and moves to the next block of material. Entry level is determined by testing in all subjects.

Civil Service standards serve as a guide for course outlines in all subject areas.

Students who have completed the basic courses or are doing exceptional work may take classes outside the program. Most commonly selected ones are accounting, keypunch, medical terminology, and medical laboratory techniques.

JOB ENTRY CURRICULUM

No.	Course	Total Class Hrs.
BUJT 11	Shorthand and Stenoscript	220
BUJT 21	Bookkeeping	440
BUJT 31	Business Mathematics and Office Machines	165
BUJT 41	Business English	220
BUJT 51	Typewriting	220
BUJT 61	Word Study	165
BUJT 71	Speech	55
BUJT 81	Personal Development and Filing	55
BUJT 91	Office Procedures	Art

BUJT 11 GREGG SHORTHAND AND STENOSCRIPT **FWS Smr 3 hrs.**

Beginning theory to advanced shorthand is programmed in both methods. Kits with theory workbooks, tapes, and records are available for practice at home and school. Student may cover the equivalent of a year of college shorthand. Transcription skills are taught. Goal: 80 wpm. The student may select either Gregg Shorthand or Stenoscript.

BUJT 21 BOOKKEEPING **FWS Smr 3 hrs.**

Clerical recordkeeping (Sales slips, invoices, simple routine office tasks as introduction to bookkeeping.)

Bookkeeping. Twenty-six chapters in double entry bookkeeping teach the student basic procedures through payroll accounts, taxes, and financial reports. Workbook materials, special problems, and supplementary projects are used.

BUJT 31 BUSINESS MATHEMATICS AND OFFICE MACHINES **FWS Smr 3 hrs.**

Includes basic mathematics, as needed, and opportunity to develop mathematics and machine skills on the 10-key adding machine and electronic calculator. Reviews fractions, decimals, interest, percentage, mark up, and other business applications. Tests must be passed covering basic computations on the machines. Additional materials are available for the development of speed.

BUJT 41 BUSINESS ENGLISH **FWS Smr 3 hrs.**
A comprehensive review of functional grammar and punctuation followed by work in various types of business communications such as employment letters, sales letters, or social business letters. Emphasis is placed on mailable copy for written work and on following instructions for all work.

BUJT 51 TYPEWRITING **FWS Smr 3 hrs.**
The student may cover the equivalent of a year of college typewriting, Gregg-programmed texts, keyboard learning tapes, skill development materials, centering, tabulation, letter forms, business forms, reports, manuscripts, medical forms, composing and answering business letters, workbooks, self tests and related office problems are taught and practiced. Duplicating machines and transcribing machines are taught. Goal: 50 wpm.

BUJT 61 WORD STUDY **FWS 3 hrs.**
This course combines spelling and vocabulary building. It also allows opportunity to combine knowledge acquired in Business English and Word Study in an office-practice setting.

BUJT 71 SPEECH **Smr 3 hrs.**
Directed toward giving the student confidence in dealing with people in an office. Job interviews, telephone manners, receptionist techniques, and short speeches before the classroom are techniques employed.

BUJT 81 PERSONAL DEVELOPMENT AND FILING **Arranged 2 hrs.**
Human relations, personal development, clothing for offices, hair care, and hygiene, to prepare people for employment. Basic rules accepted in most businesses, with actual practice in filing.

BUJT 91 OFFICE PROCEDURES AND WORK EXPERIENCE **Time and Credit Arr.**
Course covers basic techniques of finding, applying for, and securing a job; how to get along with people; improving typing skills; working with office forms and supplies (qualities of paper and carbon, etc.); knowledge of postal and shipping services; handling mail; telephone techniques; communication equipment available for modern office use; how to handle banking and credit services; financial transactions; and mechanizing office operations. Helps the student understand the modern office. Selected students are given an opportunity to receive actual work experience while in training. Job assignments, many on campus, depend on student ability and positions available.

Medical Office Assisting

CERTIFICATE

The interesting career of Medical Office Assisting has been receiving increased attention in recent years. This rapidly growing career area offers a wide choice of positions in doctors' offices, hospitals, clinics, research foundations, and drug companies. Mesa College offers a nine-month certificate program to prepare personnel for this occupation.

MEDICAL OFFICE ASSISTANT NINE-MONTH CURRICULUM

(Any deviation from this program must be approved by student's adviser and the Registrar.)

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English Composition	3	33
Medical Terminology	3	33
Intermediate Typing	3	33
Human Anatomy and Physiology	5	77
Speech Communications	3	33
	17	209

Winter Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Business Communications	3	33
Human Anatomy and Physiology	4	55
Laboratory Techniques	3	33
Secretarial Accounting	3	33
Medical Transcription I	3	33
	16	187

Spring Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Human Growth and Development	3	33
Medical Office Procedures	3	33
First Aid	2	44
Medical Transcription II	3	33
Advanced Typing	3	33
	14	176

Desirable substitutes or additions: Nutrition, Human Relations in Business, Electronic Word Processes, Business Mathematics.

Special courses for this program are described below. See appropriate sections of catalog for descriptions of other courses listed in curriculum.

HLTH 147 MEDICAL TERMINOLOGY F 3 hrs.
This course includes basic medical terminology as applied to major systems of the body and related diseases. It includes special applications as related to medical practice with special emphasis on spelling.

HLTH 154 LABORATORY TECHNIQUES W 3 hrs.
The student becomes acquainted with basic laboratory procedures such as blood counts, urinalysis, EKG, etc. Actual laboratory experiences are provided.

HLTH 159 MEDICAL OFFICE PROCEDURES S 3 hrs.
The student learns professional office relationships with patients and their families; and to observe, keep records, help with physical examinations, and assist the physician in many ways.

HLTH 251 CARDIOPULMONARY RESUSCITATION, BASIC Smr 1 hr.
This course is taught for the basic rescuer who has no previous CPR experience. Theory of external cardiac compression is taught along with the skills necessary to determine when it is necessary to initate this procedure on a heart-attack victim. Practice is provided by a recording RescuAnnie mannequin. Students receive a 1-year certification from the Colorado Heart Association for completion of this course.

HLTH 285 ADVANCED FIRST AID AND EMERGENCY CARE Smr 3 hrs.
This is the 40-hour course taught by the American National Red Cross. Topics include: respiratory emergencies, wounds, poisoning, specific injuries, drowning, dressings and bandages, burns, bone and joint injuries, cold injuries, heat environmental injuries, specific fracture treatment, sudden illness, emergency childbirth, emergency rescue and transfer, and auto extrication. Students receive a 3-year certification from the Red Cross for completion of this course. (Must have had Standard First Aid.)

HLTH 291 CARDIOPULMONARY RESUSCITATION, INSTRUCTOR Smr 2 hrs.
This course is taught to certify persons who have had previous training or experience in CPR to be instructors. Basic CPR theory is reviewed along with extensive training practice with the recording RescuAnnie mannequin. Principles of being an instructor are covered. Students receive a 1-year instructor certification from the Colorado Heart Association for completion of this course.

Secretarial Programs

Capps, T. Carmichael, Carrigan, M. Harper, E. Johnson, Myers

These programs consist of a combination of general education and skill-building courses. They are especially designed to provide opportunity for the student to attain a high degree of occupational competency in general or specific fields. A one-year certificate is available upon completion of designated courses in either the Legal or the Office Clerical-Secretarial program. The two-year Associate in Applied Science degree may be earned in either the Legal curriculum or the Medical curriculum.

LEGAL SECRETARY NINE-MONTH CURRICULUM

CERTIFICATE
Suggested Courses (45 Hours required)

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English Composition	3	33
Intermediate Typing	3	33
Beginning Dictation	4	44
Filing	2	22
Business Mathematics	4	44
	16	176

Winter Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Advanced Typing	3	33
Intermediate Dictation	4	44
Secretarial Accounting	3	33
Legal Procedures I	3	33
Machine Transcription	3	33
	16	176

Spring Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Legal Procedures II	3	33
Word Processing	3	33
Secretarial Co-op	8	400
Business Communications	3	33
	17	499

OFFICE CLERICAL-SECRETARIAL NINE-MONTH CURRICULUM

This curriculum is designed to meet the needs of students who want a short business course which will allow them to develop maximum business skills in a brief time. The curriculum is flexible and lets students select business courses enabling them to reach their employment goals.

CERTIFICATE
Suggested Courses

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English Grammar or Comp.	3	33
*Shorthand Theory I	4	44
*Beginning Typing I	3	33
Secretarial Business Math	4	44
Filing	2	22
	16	176

Winter Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Business Communications	3	33
*Shorthand Theory II	4	44
*Beginning Typing II	3	33
Secretarial Accounting	3	33
Elective	3	33
	16	176

Spring Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Secretarial Practice	3	33
Beginning Dictation	4	44
Intermediate Typing	3	33
Dictation and Transcription Machines	3	33
Elective	3	33
	16	176

**May be replaced with more advanced courses depending on the previous training of the student.*

Options or Electives

Speech Communications
Speech Making
Business Data Processing
Introduction to Business
Business Law I
Principles of Management
Human Relations in Business
Keypunch and Verifier
Production Keypunch
Punch-Card Equipment
Medical or Legal Secretarial courses
Electronic Word Processing

SECRETARY — LEGAL CURRICULUM

ASSOCIATE IN APPLIED SCIENCE
Course Sequence

FIRST YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English Composition	3	33
Intermediate Typing	3	33
Beginning Dictation	4	44
Filing	2	22
*Social Science Elective	3	33
Physical Education	1	22
	16	187
Winter Quarter		
English Composition	3	33
Advanced Typing	3	33
*Social Science Elective	3	33
Mathematics	3-5	33-55
Intermediate Dictation and Transcription	4	44
Physical Education	1	22
	17-19	198-220
Spring Quarter		
English Composition or Literature	3	33
Business Communications	3	33
Business Mathematics	4	44
*Social Science Elective	3	33
Secretarial Practice	3	33
Physical Education	1	22
	17	198

SECOND YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Business Law I	3	33
Elective	3	33
Legal Terminology	3	33
Legal Procedures I	3	33
Dictation and Transcription Machines	3	33
	15	165
Winter Quarter		
Business Law II	3	33
Human Relations in Business	3	33
Legal Procedures II	3	33
Secretarial Accounting	3	33
Introduction to Business	3	33
	15	165
Spring Quarter		
Business Law III	3	33
Elective	3	33
Word Processing	3	33
Speech	3	33
Independent Study (work experience) or Co-op	3-8	33
	15-20	332-532

**Suggested Electives: American Government, Introduction to Social Sciences, Sociology, Economics. See appropriate sections of this catalog for descriptions of courses listed above.*

SECRETARY—MEDICAL CURRICULUM

ASSOCIATE IN APPLIED SCIENCE

Course Sequence

(Any deviation from this program must be approved by student's adviser and the Registrar.)

FIRST YEAR

Fall Quarter	Qtr. Hrs.	Contact Hrs.
English Composition	3	33
Intermediate Typing	3	33
Beginning Dictation	4	44
Filing	2	22
General Psychology	3	33
Physical Education	1	22
	16	187
Winter Quarter		
English Composition	3	33
Advanced Typing	3	33
General Psychology	3	33
Elective	3	33
Mathematics	3-5	33-55
Physical Education	1	22
	16-18	187-209
Spring Quarter		
English Composition or Literature	3	33
Business Communications	3	33
Business Mathematics	4	44
Gen. Psychology or Human Growth and Development	3	33
Secretarial Practice	3	33
Physical Education	1	22
	17	198

SECOND YEAR

Fall Quarter	Qtr. Hrs	Contact Hrs.
Introduction to Social Science—Sociology	3	33
Human Anatomy and Physiology	5	77
Speech Communications	3	33
Medical Terminology	3	33
Physical Education	1	22
	15	198
Winter Quarter		
Human Anatomy and Physiology	4	55
Laboratory Techniques	3	33
*Elective	3	33
Secretarial Accounting	3	33
Physical Education	1	22
Medical Transcription I	3	33
	17	209
Spring Quarter		
Personal and Community Health	3	33
General Microbiology	5	77
Medical Office Procedures	3	33
Physical Education	1	22
Medical Transcription II	3	33
	15	198

*Suggested Elective Chemistry or Word Processing.
See appropriate sections of this catalog for descriptions of courses listed above.

Travel, Recreation and Hospitality Management

ASSOCIATE IN APPLIED SCIENCE

Isaacson

This curriculum has been designed to introduce students to training which will result in the development of competencies of value in work related to the commercial travel, recreation and hospitality industries. Employment possibilities for graduates of the program range from receptionist and office work with limited supervisory responsibilities to positions with management responsibilities in air lines, travel agencies, destination resorts, ski areas and the hospitality industries.

The specific requirements for the Associate in Applied Science degree with emphasis in Travel, Recreation and Hospitality Management include (any deviation from this program must be approved by the student's adviser and the Registrar):

Business Division Subjects as indicated	27 hrs.
Travel, Recreation and Hospitality Courses	40 hrs.
History of Colorado and Introduction to Social Science —Economics	6 hrs.
Psychology	3 hrs.
English and Technical Report Writing	9 hrs.
Elective	3 hrs.
Physical Education	3 hrs.
Regional Natural Science	3 hrs.
Total	94 hrs.

TRAVEL, RECREATION AND HOSPITALITY MANAGEMENT CURRICULUM

Suggested Course Sequence

FIRST YEAR

Fall Quarter	*Qtr. Hrs*	*Contact Hrs.*
English Composition	3	33
Salesmanship	3	33
General Psychology	3	33
Travel Industry I	5	55
Physical Education	1	22
	15	176
Winter Quarter		
English Composition	3	33
Business Mathematics	4	44
Human Relations in Business	3	33
Travel Industry II	5	55
Physical Education	1	22
	16	187
Spring Quarter		
Technical Report Writing	3	33
Regional Natural Science	3	33
Survey and Markets of Travel	3	33
Pre-Intern Seminar	2	33
Principles of Accounting	5	55
	17	187

Summer Session Between Freshman and Sophomore Year

	Qtr. Hrs.	*Contact Hrs.*
Work Experience	15	400

SECOND YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Business Law I	3	33
Management in the Travel Industry I	3	33
Post-Intern Seminar	3	33
Principles of Management	3	33
Elective	3	33
	15	165
Winter Quarter		
Introduction to Social Science—Economics	3	33
Principles of Marketing	3	33
Management in the Travel Industry II	3	33
History of Colorado	3	33
Physical Education	1	22
Advertising	3	33
	16	187

BUTR 101 THE TRAVEL INDUSTRY I **F 5 hrs.**

A freshman introductory class in the elements of tourism. Evaluates the various components of tourism, travel modes and tourism destination developments. The economic and social impact of tourism is analyzed. A prerequisite for all Travel, Recreation and Hospitality Management majors.

BUTR 102 THE TRAVEL INDUSTRY II **W 5 hrs.**

A continuation of BUTR 101. Includes evaluation of job opportunities in the travel, recreation and hospitality fields; study of Colorado travel trends, feasibility of destination resort areas, and techniques of developing promotional plans for resort areas. Prerequisite: BUTR 101.

BUTR 103 SURVEY AND MARKETS OF THE TRAVEL INDUSTRY **S 3 hrs.**

Analysis of techniques used in developing accurate surveys, feasibility studies and marketing programs for travel-oriented businesses.

BUTR 151 PRE-INTERNSHIP SEMINAR **S 3 hrs.**

A workshop-type class providing the student with individualized preparation for summer workshop experiences and skill instruction in areas of student's career objective. Field trips arranged. Student must complete the course prior to BUTR 251. Prerequisite: BUTR 102.

BUTR 201, 202 MANAGEMENT IN THE TRAVEL INDUSTRY I, II **FW 3 hrs.**

Explores operating techniques and problems of the major industries involved in tourism through the eyes of the operational manager.

BUTR 251 WORK EXPERIENCE **FWS Smr 15 hrs.**

The student will be placed in travel and recreation industries such as the Forest Service, cooperating airlines, hotels, motels, etc., on a cooperative experience basis. For Travel, Recreation and Hospitality Management majors only. Prerequisite: BUTR 151.

BUTR 252 POST-INTERNSHIP SEMINAR **F 3 hrs.**

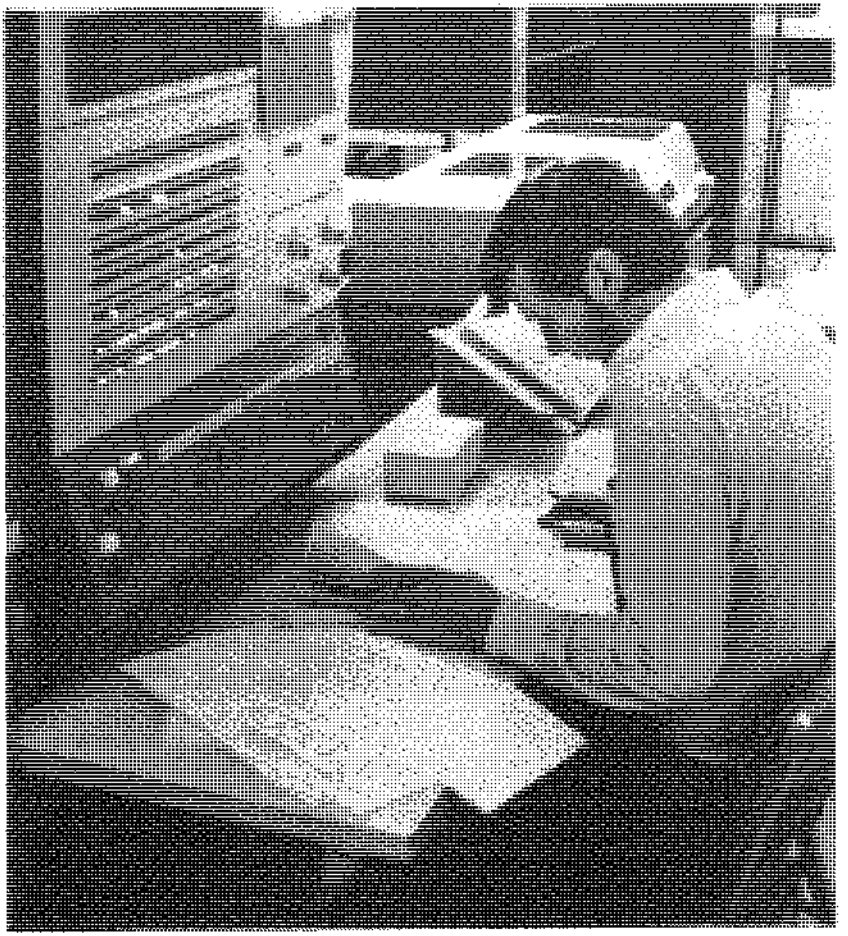
The students' prior work experience is evaluated and deficient skills and attitudes are identified. Additional skill training. Field trips and visiting lecturers provide the student with information and exposure to areas of special interest. Prerequisite: BUTR 102, 103, 251.

BUTR 261, 262, 263 INDEPENDENT STUDY IN TRAVEL, RECREATION, AND HOSPITALITY MANAGEMENT **FWS 1-3 hrs.**

Students must apply for this course through their adviser at least three weeks prior to the end of the quarter preceding the quarter in which they wish to take Independent Study. Only students who have completed nine credit hours of work in the field chosen for Independent Study and who have a cumulative grade-point average of 2.5 or higher will be allowed to enroll for credit in this course. Consent of instructor required in all cases.

BUTR 264, 265, 266 RELATED WORK EXPERIENCE **FWS 1-3 hrs.**

Working in a business and a position approved by the Division of Business, the student receives practical experience and an opportunity to apply academic knowledge in a work situation. The student is responsible for securing the position and arranging work hours. Written papers are required as part of the course work. A minimum of three hours per week is required for one hour of credit, six hours for two credits, and nine hours for three credits. Prerequisite: Background courses in area of job responsibilities and permission of the instructor. Students must apply for this course through their adviser at least three week prior to the end of the quarter preceding the quarter in which they wish to take the course. A maximum of three credit hours may apply toward an associate degree and six credit hours toward a baccalaureate-degree program. A maximum of eighteen hours of work experience, co-op programs, internships, or advanced-problems classes may be used toward the specific requirements of a baccalaureate degree.



Other Occupational Programs

Production Agriculture

CERTIFICATES AND ASSOCIATE IN APPLIED SCIENCE

This program provides learning opportunities in production agriculture with emphasis on actual farm methods and includes technical agriculture, farm management, mechanics, and general farm operation.

The program consists of modules ranging in length from two to six weeks. Each module has specific skill orientation to enable the student to utilize his training upon completion of the module. Both classroom and on-the-farm experiences are included in each module.

Veterans may enroll in the program for farm training.

A student may enroll in one or more modules as individual needs and interests dictate. A certificate will be awarded upon completion of each module.

The Associate in Applied Science Degree may be awarded upon completion of 72 quarter hours in any combination of modules plus 21 quarter hours of general education.

Module	Credit Hrs.	Contact Hrs.
Introduction to Farming	3	48
Irrigation	3	48
Fence Building	3	48
Welding	6	96
Insects and Control	6	96
Small Engines	3	48
Large Engines	3	48
Row Crops	9	108
Fruit Crops	9	108
Green House Operation	6	96
Landscaping	6	96
Turf Management	3	48
Horses	3	48

Module	Credit Hrs.	Contact Hrs.
Cattle	6	96
Sheep	3	48
Swine and Chickens	3	48
Soils	3	48
Fertilizers	3	48
Buildings	3	48
Dairy Operation	6	96
Farming Tourism	3	48
Business Principles	3	48
Decision-Making in Agriculture	3	48
Forage Crops	3	48
Vegetable Crops	3	48

This program does not operate on the traditional quarter system. Consult the department for starting times.

AGPR 111 INTRODUCTION TO FARMING **3 hrs.**
A study of the trends in the industry, economics of farming and future aspects of the industry.

AGPR 112 IRRIGATION **3 hrs.**
Practice in the use of siphon tubes, sprinkler systems, concrete ditches, salinity control, and amounts of water.

AGPR 113 FENCE BUILDING **3 hrs.**
Practical application and methods for farm and ranch fencing, ornamental, industrial.

AGPR 114 WELDING **6 hrs.**
Practice and theory of gas and arc welding, metals and machinery repair.

AGPR 115 INSECTS AND CONTROL **6 hrs.**
Identification and control of insects found in fruit, row crops, and general farming. Use of chemicals and application of sprays.

AGPR 116 SMALL ENGINES **3 hrs.**
Practice in tune-up, maintenance, trouble shooting, and simple repair.

AGPR 117 LARGE ENGINES **3 hrs.**
Practice in tune-up, maintenance, trouble shooting, and simple repair.

AGPR 118 ROW CROPS **9 hrs.**
Planting, cultivation, irrigation, and harvesting of alfalfa, corn, grains, grasses, and vegetables.

AGPR 119 FRUIT CROPS **9 hrs.**
Planting, cultivation, irrigation, yearly care, and production and harvesting of peaches, pears, apples, apricots, cherries, and miscellaneous fruits.

AGPR 120 GREENHOUSE OPERATION **6 hrs.**
Theory and practice of crops, construction, and maintenance.

AGPR 121 LANDSCAPING **6 hrs.**
Theory and practice of grass and plants, hard materials, irrigation, and pruning.

AGPR 122 TURF MANAGEMENT **3 hrs.**
Maintenance of turf including care, insects, irrigation, soils, fertilizers.

AGPR 123 HORSES **3 hrs.**
Care, handling, maintenance, diseases.

AGPR 124 CATTLE **6 hrs.**
Care, production, maintenance, diseases.

AGPR 125 SHEEP **3 hrs.**
Care, production, maintenance, diseases.

AGPR 126 SWINE AND CHICKEN **3 hrs.**
Care, production, maintenance, diseases.

AGPR 127 SOILS **3 hrs.**
Production soils, salts, shale, sand.

AGPR 128 FERTILIZERS **3 hrs.**
Applications and uses, chemical, barnyard.

AGPR 129 BUILDINGS **3 hrs.**
Farm and ranch structures, barns, sheds, specialized facilities.

AGPR 130 DAIRY OPERATION **3 hrs.**
Milk production, cows and their maintenance, buildings, equipment.

AGPR 131 FARMING COMBINED WITH TOURISM **3 hrs.**
The tourism industry, guest ranches, recreation, a combined operation.

AGPR 132 BUSINESS PRINCIPLES **3 hrs.**
Bookkeeping, financing, taxes, economics.

AGPR 133 MARKETING **3 hrs.**
An exploration of the methods, systems, and channels used in the marketing of farm products. Includes a study of the commodity futures market as a method to increase marketing efficiency.

AGPR 134 DECISION-MAKING IN AGRICULTURE **3 hrs.**
An overview of general decision-making encountered by farmers and ranchers.

AGPR 135 FORAGE CROPS **3 hrs.**
Planting, irrigation, maintenance, and harvesting of forage crops.

AGPR 136 VEGETABLE CROPS **3 hrs.**
Planting, cultivation, irrigation, and harvesting of vegetable crops.

Early Childhood Education

ONE-YEAR PROGRAM AND ASSOCIATE IN APPLIED SCIENCE

Beemer

The Early Childhood Education curriculum is offered to meet the needs of those presently employed in nursery schools or day-care centers and those contemplating working in the field.

Students majoring in this curriculum take courses designed to increase their understanding of the education and care of children. It is required that the student have laboratory experience in Mesa College's Child Care Center and other community child-care facilities.

Students successfully completing the course may find employment in private and cooperative day-care centers, nursery schools, children's homes, institutions for exceptional children, etc. Placement is dependent on individual maturity and professional growth.

ONE-YEAR PROGRAM

A student may enroll at any time through the year. State certification to teach preschool requires 36 credit hours.

	Credit Hrs.
Psychology (2 classes)	6
Nutrition	3
Child Care	3
Child Development	3
Student Teaching	6
Child Care Center Management I	3
*Elementary Art	3
*Children's Literature	3
Early Childhood Education Curriculum I and II	4
*Music and Methods in Early Childhood	3
*Creative Dramatics	3
Child Care Center Management II	3
Marriage & Family	1
First Aid	2

*Extra hours that students may include in their schedule. One of these classes must be selected for elective credit.

ASSOCIATE IN APPLIED SCIENCE

Requirements for the Associate in Applied Science degree in Early Childhood Education include the following:

English	9 hrs.
Social Science or Literature	9 hrs.
Physical Education	3 hrs.
Psychology	9 hrs.
Required Courses for Child Care Center Director	51 hrs.
Electives	12 hrs.
Total required for graduation	93 hrs.

EARLY CHILDHOOD EDUCATION CURRICULUM

Suggested Course Sequence

FIRST YEAR

Fall Quarter	Qtr. Hrs.	Contact Hrs.
English 111	3	33
General Psychology 121	3	33
Child Care	3	33
Speech (Speech Pathology Recommended)	3	33
Physical Education	1	22
Introduction to Early Childhood	1	11
Elective	1	22
	15	187
Winter Quarter		
English 112	3	33
General Psychology 122	3	33
Child Development	3	36
Elementary Art	3	36
Early Childhood Education Curriculum I	2	22
Music and Methods in Early Childhood	3	36
	17	196
Spring Quarter		
English 113	3	33
General Psychology 123	3	33
Early Childhood Education Curriculum II	2	33
Creative Dramatics	3	33
Physical Education	1	22
Elective	1	22
Child Development	2	22
	15	198

SECOND YEAR

Fall Quarter	Qtr. Hrs.	Contact Hrs.
Marriage and Family	3	33
Nutrition	3	33
Literature	3	33
Electives	3	33
Child Welfare	2	22
Physical Education	1	22
	15	176
Winter Quarter		
Sociology or History	3	33
Foods	3	66
Childrens' Literature	3	36
Electives	3	33
Child Care Center Management I	3	33
	15	201
Spring Quarter		
Foods	3	45
Internship	6	150
Child Care Center Management II	3	33
First Aid	2	22
Electives	2	22
	16	272

CCCD 111 EARLY CHILDHOOD EDUCATION CURRICULUM I **W 2 hrs.**

Philosophy and theory of preschool education. Preparation for Nursery School Education and Laboratory offered spring quarter.

CCCD 112L EARLY CHILDHOOD EDUCATION CURRICULUM II **WS 2 hrs.**

A laboratory for learning about children and the philosophy, goals and operation of the nursery school. Students spend one morning each week in assigned laboratory experience and participate in a group meeting one day each week for discussion and evaluation.

CCCD 121 INTRODUCTION TO EARLY CHILDHOOD **FS 1 hr.**

To acquaint new students with the field of early childhood, to gain knowledge of the facilities and programs offered for young children, and to observe young children at work and play.

CCCD 251 PRINCIPLES OF CHILD WELFARE **F 2 hrs.**
History and philosophy of child welfare movement. Local, state and national agencies offering family and child welfare services. Licensing and health regulations for children's centers.

CCCD 252-253 INTERNSHIP IN LICENSED CENTERS **FWS 6 hrs.**
Students spend a minimum of three hours per day working in licensed centers under a qualified teacher. Supervised by college instructor with conference periods and evaluation of student's progress. Students must enroll in these classes concurrently for a total of six credit hours.

CCCD 257 INDEPENDENT STUDY IN CHILD CARE **FWS 1 hr.**

CCCD 258 INDEPENDENT STUDY IN CHILD CARE **FWS 2 hrs.**

CCCD 259 INDEPENDENT STUDY IN CHILD CARE **FWS 3 hrs.**

CCCD 260 CHILD CARE CENTER MANAGEMENT I **W 3 hrs.**
A study of record-keeping and budgeting necessary in the operation of a child care center.

CCCD 261 CHILD CARE CENTER MANAGEMENT II **S 3 hrs.**
Includes human relations in dealing with parents, peers, and employee-employer relationships. Administration of child-care centers is covered including selection of employees, equipment and building selection, and methods of purchasing goods.

Electronics Technology

ASSOCIATE IN APPLIED SCIENCE

Fetters, Timpte

The Electronics Technology curriculum has been arranged to provide optimum specialized technical instruction. The objective and the emphasis throughout is on an understanding of the engineering principles basic to the field of electronics. The curriculum is organized in a manner unlike that found in the professional engineering school or in the traditional trade school.

The curriculum is organized to provide a basic preparation for entry employment in a variety of occupations in the field of electronics. The courses are arranged in workable sequences suitable to the instructional needs of the students with an appropriate balance between technology courses, general education courses, and laboratory applications. It is not a pre-engineering curriculum suitable for transfer to other institutions.

A graduate of this program will have a good foundation in the principles of electronics and considerable facility with the "hardware" encountered in the electronics industry.

A background of algebra, geometry, and trigonometry is desired for this program.

Requirements for the Associate in Applied Science degree in Electronics include the following:

English 111, 112, 115	9 hrs.
Social Science	9 hrs.
Physical Education	3 hrs.
Electronics	76 hrs.
Total required for graduation	97 hrs.

ELECTRONICS TECHNOLOGY CURRICULUM

FIRST YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English 111	3	33
Technical Mathematics	4	44
Shop Processes	2	33
Concepts of Direct-Current Circuits	7	110
Radio Fundamentals	2	33
	18	253

SECOND YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Pulse and Video Circuits I	5	77
Transistor Electronics	4	66
Communication Theory I	4	66
Introduction to Social Science (Sociology)	3	33
Physical Education	1	22
	17	264

FIRST YEAR (continued)		
Winter Quarter		
English 112	3	33
Technical Mathematics	4	44
Alternating Current Analysis	7	110
Physical Education	1	22
Radio Fundamentals	2	33
	17	242
Spring Quarter		
Technical Mathematics	4	44
Basic Electronics	7	110
Physics	5	77
Radio Fundamentals	2	33
	18	264

SECOND YEAR (continued)		
Winter Quarter		
Communication Theory II	4	66
Pulse and Video Circuits II	6	66
Electrical-Electronic Drafting	2	22
Human Relations	3	33
Introduction to Social Science	3	33
Physical Education	1	22
	17	242
Spring Quarter		
Research Project	1	33
Calibration and Maintenance of Test Equipment	4	66
Ultra High Frequencies and Microwaves	4	66
Intro to Computers	4	66
English 115	3	33
	16	264

ELEC 114 SHOP PROCESSES **F 2 hrs.**

The course is designed to help the student develop information in the use of hand tools, machine tools, equipment and various types of materials which will be encountered in work as a technician. Laboratory exercises are designed to introduce students to tools, materials and equipment. Shop safety is stressed. Class: 1 hour. Laboratory: 2 hours.

ELEC 117 CONCEPTS OF DIRECT CURRENT CIRCUITS **F 7 hrs.**

An introduction to electronics, atomic structure, electrostatics, basic electrical units, electronic components and diagrams, powers of ten ammeters, voltmeters, ohmmeters, multimeters. Magnetic fundamentals, electromagnetism, meter movements, special meters. Kerchoff's first and second laws, electrical power, self inductance, mutual inductance, inductors, capacitors, capacitors marking systems, capacitor theory. Class: 4 hours. Laboratory: 6 hours.

ELEC 118 ALTERNATING CURRENT CIRCUIT ANALYSIS **W 7 hrs.**

Generation of alternating current, alternating current fundamentals, multipolar generators, introduction to vectors, A-C resistive circuits, inductance, inductive reactance and impedance, series L-R circuits analysis, parallel L-R circuits analysis. R-L time constants, capacitance and capacitive reactance, series R-L-C circuit analysis, parallel R-L-C circuit, power in A-C circuits, impedance matching and reflected impedance, transformer losses and ratings; application of vector algebra in the analysis of impedance networks. Prerequisite: ETEC 101. The course is conducted in conjunction with ETEC 102. Class: 4 hours. Laboratory: 6 hours.

ELEC 119 BASIC ELECTRONICS **S 7 hrs.**

Electron emission, thermionic emitters, vacuum tube, static and dynamic characteristics, concepts of semiconductors, classes of amplifier operations, transistor types, transistor equivalent circuits, beam power vacuum tubes, multisection tubes, gas tubes, phototubes and electron-ray indicators, cathode-ray tube, high frequency tubes, tube and semi-conductor manual and specification interpretation, tube designation and basing. Prerequisite: ELEC 118. Class: 4 hours. Laboratory: 6 hours.

ELEC 121, 122, 123 RADIO AND TELEVISION FUNDAMENTALS **FWS 2 hrs.**

Covers basic principles and repair of radio and television.

ELEC 251 PULSE AND VIDEO CIRCUITS I **F 5 hrs.**

The study of electronic circuit technology applying the principles of vacuum tubes to circuits designed to produce nonsinusoidal or pulse signal waveshapes. Analysis of multivibrators, blocking and shock excited oscillators, limitors, clampers and sweep generator circuits will be made both in the classroom and laboratory. Class: 3 hours. Laboratory: 4 hours.

ELEC 252 PULSE AND VIDEO CIRCUITS II **W 4 hrs.**

A continuation of ELEC 251 with emphasis on the analysis of electronic circuits and systems utilizing the circuits studied in ELEC 251. Television and radar are studied, applying the principles of pulse-shaping circuits. Class: 2 hours. Laboratory: 4 hours.

ELEC 253 TRANSISTOR ELECTRONICS I **F 4 hrs.**

A course of semiconductor action, junction, transistor, static characteristics; principles of transistor circuitry, transistor circuit parameters, common-base amplifier, common-emitters amplifier and bias stabilization. Laboratory application will be by auto amplifiers, voltage-regulated power supplies, superheterodyne receivers and transistors, transmitters. Class: 2 hours. Laboratory: 4 hours.

ELEC 256 COMMUNICATION THEORY I F 4 hrs.
Amplitude modulation and frequency modulation. Radio frequency oscillators and power amplifiers, antennas, modulators, radio-frequency measurements. Two-way communications. Requirements for government radio operator licenses. Communications application. Prerequisite: ELEC 119. Class: 2 hours. Laboratory: 4 hours.

ELEC 257 COMMUNICATION THEORY II W 4 hrs.
Continuation of ELEC 256. Prerequisite: ELEC 251. Class: 2 hours. Laboratory: 4 hours.

ELEC 258 PHYSICS F 5 hrs.
Graphical and mathematical analysis of force; laws of motion, machines, mechanical power, strength of material, fluid mechanics and thermal conductivity; basic principles of physics. Emphasis on applied problems. Class: 4 hours. Laboratory: 4 hours.

ELEC 259 ULTRA HIGH FREQUENCIES AND MICROWAVES I S 4 hrs.
Line sections, wave guides and cavities; UHF tubes and oscillators; klystrons, magnetrons and traveling-wave tubes; microwave antennas; principles of radar and microwave systems. Prerequisite: ELEC 119 and ELEC 251. Class: 2 hours. Laboratory: 4 hours.

ELEC 261 CALIBRATION AND MAINTENANCE OF TEST EQUIPMENT S 4 hrs.
An introductory presentation of the basic theory and principles of the construction and operation of instruments most often used by industry. Emphasis will be placed on the standardization, calibration, serving and maintenance of the major portion of industrial test equipment. Class: 2 hours. Laboratory: 4 hours.

ELEC 264 RESEARCH PROJECT W 1 hr.
Individual assignment to the development of apparatus of special interest to the student with the instructor's approval. Students provide their materials. A written report of the work is required. Frequent conferences between the student and adviser serve to guide the student's progress. Laboratory: 3 hours.

ELEC 265 INTRODUCTION TO COMPUTERS S 4 hrs.
Includes introduction to binary concept; use of two states to perform logic functions and counts; use of simpler logic gates to construct more-complex devices; study of Boolean algebra, logic truth tables, and how transition from a logic requirement to a gating network is accomplished. Also deals with digital subsystems, mathematical process of binary addition including methods of complementary binary subtraction, binary coded decimal counting and code conversion; and some discussion of digital systems.

Engineering Technician

ASSOCIATE IN APPLIED SCIENCE

Ramsey, Rybak

Engineering technology is that part of the technological field which requires the application of scientific and engineering knowledge with methods of technical skills in support of engineering activities. This program is designed to enable technicians to take the ideas of design, research, and advance planning of the engineer (who nowadays has little time for application) and translate them into practical application: to work with the engineer to take a design from idea to planning and then to production. With the present shortage of engineering technicians, career opportunities are excellent.

Students interested in Engineering Technology should have good communication techniques, math and physical science aptitude, at least one and one-half years of high school algebra and geometry, and one year of chemistry or physics. Students should be curious about how things work and should have some mechanical aptitude.

Requirements for the Associate in Applied Science degree in Engineering Technology (Civil) include the following:

English 111, 112, or 115	9 hrs.
Physical Education	3 hrs.
Social Science	9 hrs.
Engineering Technology	43 hrs.
Mathematics (ETEC 101, 102 103)	12 hrs.
Engineering 111, 112, 114	9 hrs.
Engineering 231, 232, 233	9 hrs.
Total required for graduation	94 hrs.

CIVIL ENGINEERING TECHNICIAN CURRICULUM

FIRST YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English 111	3	33
Technical Mathematics	4	44
Soils Engineering	3	77
Engr. Graphics and Design I	3	66
Social Science or Literature	3	33
	17	275
Winter Quarter		
English 112	3	33
Technical Mathematics	4	44
Concrete I	3	77
Engr. Graphics and Design II	3	66
Physical Education	1	22
Social Science Elective	3	33
	17	275
Spring Quarter		
English 115	3	33
Technical Mathematics	4	44
Construction Practices	3	33
FORTRAN and Engr. Problems	3	121
Programmable Calculator	2	22
Social Science elective	3	33
	17	286

SECOND YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Elementary Surveying	3	66
Specifications and Cost Estimates	3	33
Mechanics	3	66
Design and Drafting— Topographical	3	66
Physical Education	1	22
Elective	3	33
	16	286
Winter Quarter		
Surveying Curves and Earthwork	3	88
Strength of Materials	3	66
Fluid Mechanics and Hydraulics	3	66
Municipal Engineering	3	33
Elective	3	33
Physical Education	1	22
	16	308
Spring Quarter		
Advanced Surveying	3	88
Strength of Materials	3	66
Independent Study in Engineering Technology	3	66
Transportation Engineering	3	66
Drafting and Design — Structural	3	66
	15	352

Requirements for the Associate in Applied Science degree in Engineering Technology (Drafting) include the following:

English 111, 112, or 115	9 hrs.
Social Science and Literature	9 hrs.
Physical Education	3 hrs.
Mathematics (ETEC 101, 102, 103)	12 hrs.
Engineering 111, 112, 114	9 hrs.
Engineering Technology	48 hrs.
Engineering 230	3 hrs.
Total required for graduation	93 hrs.

DRAFTING TECHNICIAN CURRICULUM

FIRST YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
English 111	3	33
Technical Mathematics	4	44
Engr. Graphics and Design I	3	77
Soils Engineering	3	77
Reproductions	3	44
Physical Education	1	22
	17	286
Winter Quarter		
English 112	3	33
Technical Mathematics	4	44
Drafting and Design — Mechanical Systems	3	66
Engr. Graphics and Design II	3	66
Technical Illustrating I	3	66
Physical Education	1	22
	17	297
Spring Quarter		
English 115	3	33
Technical Mathematics	4	44
FORTRAN and Engineering Problems	3	121
Technical Illustrating II	3	66
Slide Rule	1	22
Programmable Calculator	1	22
Physical Education	1	22
	16	330

SECOND YEAR

Fall Quarter	*Qtr. Hrs.*	*Contact Hrs.*
Drafting and Design — Electrical Systems	3	66
Drafting and Design — Topographical	3	66
Specifications and Cost Estimates	2	22
Mechanics	3	66
Topographical Surveying	3	66
Social Science or Literature	3	33
	17	319
Winter Quarter		
Mechanical Drawing	3	66
Drafting and Design — Architectural	3	66
Electrical Electronic Drafting	2	66
Strength of Materials	3	66
Social Service elective	3	33
	14	297
Spring Quarter		
Independent Study in Engineering Technology	3	66
Drafting and Design — Structural	3	66
Introduction to Machine Design	3	66
Strength of Materials	3	66
Social Science elective	3	33
	15	297

OPTIONS:

ELECTRICAL APPLIED — During Fall Quarter, instead of Drafting and Design (Electrical Systems) and Drafting and Design (Topographical), take Concepts of Direct-Current Circuits.
During Winter Quarter, instead of Drafting and Design (Architectural) and Mechanical Drafting, take Alternating-Current Circuit Analysis.

CIVIL APPLIED — Instead of Mechanical Drafting, take Fluid Mechanics and Hydraulics.
Instead of Drafting and Design (Electrical Systems), take Concrete I.

ETEC 101 TECHNICAL MATHEMATICS I **F 4 hrs.**
A review of algebra including fundamental concepts and operations, functions and graphs, systems fo linear equations, determinants, factoring and fractions, quadratic equations, exponents and radicals. Prerequisite: MATH 20 or high school algebra.

ETEC 102 TECHNICAL MATHEMATICS II **W 4 hrs.**
A concentrated study of trigonometry and additional topics of algebra with emphasis placed on applications in technical fields. Logarithms, trigonometric functions of angles, radian measure, vectors and oblique triangles, graphs of trigonometric functions, complex numbers and the j-operator, inequalities and variation. Electronic calculators used in problem solution.

ETEC 103 TECHNICAL MATHEMATICS III **S 4 hrs.**
Advanced topics in algebra and trigonometry with an introduction to analytic geometry. Matrix algebra, graphical solutions of non-algebraic equations, equations of higher degree, progressions and the binomial theorem, trigonometric identities, inverse functions, straight lines, conic sections, parametric forms, introduction to statistics and empirical curve fittings. Extensive use is made of electronic calculators in problem solving.

ETEC 120 CONSTRUCTION PRACTICES **S 3 hrs.**
A study of construction techniques, materials, structural systems, and job, site planning.

ETEC 123 CONCRETE I **W 3 hrs.**
An introduction to cement, aggregates, selection and design of concrete mixtures, and sampling and testing procedures.

ETEC 125 SOILS ENGINEERING **F 3 hrs.**
Properties of soils with compaction, consistency, classification, moisture, frost-action, permeability, strength, lateral pressures, bearing capacity, piling foundations, soil exploration, spread-footings, subgrades and pavements. Earth dams. Class: 3 hours. Laboratory: 2 hours.

ETEC 161 REPRODUCTIONS **F 3 hrs.**
Use of all types of reproduction methods, blueprinting, offset printing, photographic copying, thermofaxing. Class: 1 hour. Laboratory: 3 hours.

ETEC 162 TECHNICAL ILLUSTRATING I **W 3 hrs.**
The study of techniques used to prepare illustrations for advertising, marketing, and educational purposes. Basic rendering, airbrush, and scratchboard techniques are applied to pictorial, exploded, and orthographic views resulting in a variety of illustrations and transparencies.

ETEC 163 TECHNICAL ILLUSTRATING II **S 3 hrs.**
A continued study of the techniques used to prepare a variety of illustrations. Emphasis is placed on advanced rendering, airbrush, and pictorial projection techniques. Prerequisite: ETEC 259.

ETEC 220 SPECIFICATIONS AND COST ESTIMATES **F 3 hrs.**
Preparation of specifications and contract documents. Estimates of cost and construction. Bidding schedules for civil engineering projects. Prerequisite: 2 years of high school mechanical drawing or ENGR 105 or consent of instructor.

ETEC 230 MUNICIPAL ENGINEERING **W 3 hrs.**
Water supply and sewage; the responsibility of the sanitary engineer in rural and city environment; rainfall and ground run-off ecology; collection and distribution of water supplies; the treatment of water: clarification, filtration, chlorination, flouridation, coagulation, flocculation. The bacteriology of sewage and sewage treatment, storm sewage, development of sewer systems, sewage disposal, sedimentation, filtration, sludge, treatment and disposal, digestion, lagoons, and septic systems.

ETEC 233 TRANSPORTATION ENGINEERING **S 3 hrs.**
Specific problems of highways, including planning, economy, finance, location, characteristics of design such as curves, alignment, grades, earthwork columns, subgrades, section of equipment, job planning, estimating and proposal preparation. Also airports, railroads, etc.

ETEC 240 MECHANICS **F 3 hrs.**
Basic principles of statics. Applications of the basic equilibrium equations to coplanar, and concurrent, nonconcurrent force systems. Miscellaneous topics include friction, hydrostatic loading, cables and arches. Prerequisite: ETEC 103.

ETEC 241, 242 STRENGTH OF MATERIALS I, II **WS 3 hrs.**
Stress and strain of members in tension, compression, shear and torsion. Beam and column deflection and design. Properties of riveted and welded joints. Centroids and moments of inertia. Laboratory investigations of the properties of various materials and testing procedures used in engineering. Prerequisite: ETEC 240. Class: 3 hours. Laboratory: 3 hours.

ETEC 245 FLUID MECHANICS AND HYDRAULICS **W 3 hrs.**
Properties of fluids, viscosity, steady, laminar and turbulent flow, Reynolds Number. Hydrostatic pressure on submerged plane surfaces. Bernoulli's Energy Theorem. Pilot tube, venturi, orifice nozzles and weirs. Critical velocity in pipes. Head loss in pipe fittings, valves, friction coefficients. Hydraulic turbo machinery. Flow in pipe nets and open channels. Prerequisite: ETEC 103.

ETEC 251 ELECTRICAL-ELECTRONIC DRAFTING **W 2 hrs.**
A course designed to develop ability to work with symbols, terms, and drafting standards which are used in electrical and electronic drafting, and to apply them to the drafting of electrical circuits and basic electrical and electronic apparatus. Prerequisite: ENGR 105 or equivalent.

ETEC 252 DRAFTING AND DESIGN — STRUCTURAL **S 3 hrs.**
This course is designed to apply the principles of design to arrive at solutions to structural problems and to present these solutions in the form of detailed drawings using proper drafting techniques. Prerequisite: ETEC 241 or consent of instructor.

ETEC 253 DRAFTING AND DESIGN — TOPOGRAPHICAL **F 3 hrs.**
This course covers the history, fundamentals, and methods of map-making. There are two three-hour classes per week, each consisting of one-hour lecture and discussion period and a two-hour lab period during which map-making skills will be practiced. Prerequisite: ENGR 105 or equivalent.

ETEC 254 MECHANICAL DRAFTING **W 3 hrs.**
Drafting practices and techniques as required by various engineering fields are covered. Skills are developed by using standard drafting instruments and equipment during the lab hours. Prerequisite: ENGR 105 or equivalent.

ETEC 255 DRAFTING AND DESIGN — MECHANICAL SYSTEMS **W 3 hrs.**
The basic design methods and problems of various mechanical systems for buildings and industry are covered. During the lab portions of this course, simple systems will be designed and drawn for various mechanical systems. Prerequisite: ENGR 105 or equivalent.

ETEC 256 INTRODUCTION TO MACHINE DESIGN **S 3 hrs.**
Applying design principles to machine members. Drawing designed members to standards of industry. Utilizing standard joining techniques and available stock items in designs. Prerequisite: ENGR 105 or equivalent.

ETEC 257 DRAFTING AND DESIGN — ELECTRICAL SYSTEMS **F 3 hrs.**
The interrelationship of electric heating, wiring, audio, lighting, elevators, and acoustics to architecture. Prepare electrical systems designs using standard procedure. Prerequisite: ENGR 105 or equivalent.

ETEC 258 DRAFTING AND DESIGN — ARCHITECTURAL **W 3 hrs.**
Architectural fundamentals of perspective drawings, shadows and architectural rendering. Symbols, use of templates and special equipment. Working drawings and specifications. Class: 2 hours. Laboratory: 4 hours.

ETEC 290 INDEPENDENT STUDY IN ENGINEERING TECHNOLOGY **3 hrs.**
Qualified students conduct an in-depth study of a problem of their choice related to engineering technology with instructor's approval. Prerequisite: Instructor's permission.

Fire Science

ASSOCIATE IN APPLIED SCIENCE

This two year program provides special training for individuals who are presently employed in public or private fire-protection agencies. It is offered in the night school for the convenience of employed persons who wish to upgrade their formal education and skills.

Requirements for the Associate in Applied Science degree in Fire Science Technology include the following:

Fire Science Courses	36 hrs.
Communications	9 hrs.
Physical Education	3 hrs.
Speech	3 hrs.
Political Science-Government	3 hrs.
Survey of Physical Science	6 hrs.
Mathematics	5 hrs.
Blueprint Reading	3 hrs.
Human Relations	3 hrs.
Psychology	3 hrs.
Rescue and First Aid	6 hrs.
Chemistry	5 hrs.
Insurance	3 hrs.
Social Science	3 hrs.
Elective	3 hrs.
Total required for graduation	94 hrs.

FIRS 251 FUNDAMENTALS OF FIRE PREVENTION F 3 hrs.
Organization and function of the fire prevention organization; inspections; surveying and mapping procedures; recognition of fire hazards; engineering a solution of the hazard; endorsement of the solution; public relations.

FIRS 252 FIRE HYDRAULICS F 3 hrs.
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.

FIRS 253 FIRE APPARATUS AND EQUIPMENT F 3 hrs.
Driving laws, driving technique, construction and operation of pumping engines, ladder trucks, aerial platforms, specialized equipment; apparatus maintenance.

FIRS 254 HAZARDOUS MATERIALS I F 3 hrs.
A review of basic chemistry, storage, handling, laws, standards and fire fighting practices pertaining to hazardous materials.

FIRS 261 PLANT LAYOUT FOR FIRE SAFETY W 3 hrs.
An analysis of industrial fire protection.

FIRS 262 RELATED CODES AND ORDINANCES W 3 hrs.
Familiarization with national, state, and local laws and ordinances which influence the field of fire prevention.

FIRS 263 FIRE FIGHTING TACTICS AND STRATEGY W 3 hrs.
Review of fire chemistry, equipment, and manpower; basic fire fighting tactics and strategy; methods of attack; pre-planning fire problems.

FIRS 264 HAZARDOUS MATERIALS II W 3 hrs.
Continuation of the study of hazardous materials covering storage, handling, laws, standards, and fire fighting practices with emphasis on fire fighting and control at the contemporary officer level.

FIRS 271 FIRE DEPARTMENT ADMINISTRATION S 3 hrs.
Consideration of basic concepts and principles of administration applicable to the organization and administration of an efficient fire department.

FIRS 272 RESCUE AND FIRST AID S 5 hrs.
Rescue practices, the human body, emergency care of victims, childbirth, artificial respiration, toxic gases, chemicals, diseases, radioactive hazards, rescue problems, and techniques.

FIRS 273 PROPERTY AND CASUALTY INSURANCE S 3 hrs.
An analysis of the fire insurance rating structure. Elements involved in establishing insurance rates. The grading system for cities and towns, the classification of cities and towns, and hazard factors in occupancy, construction and exposures.

FIRS 274 FIRE INVESTIGATION S 3 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 procedure and giving court testimony.

FIRS 275 FIRE PROTECTION EQUIPMENT AND SYSTEMS S 3 hrs.
Portable fire extinguishing equipment; sprinkler systems; protective systems for special hazards; fire alarm and detection systems.

Graphic Communications Technology

ASSOCIATE IN APPLIED SCIENCE

Duff

A two-year technical program designed to prepare the student to enter business, industry, and education systems. The student develops basic skills in visual information design, visual information reproduction, and visual information recording, storage, and retrieval.

GRAPHIC COMMUNICATIONS TECHNOLOGY CURRICULUM

Requirements for the Associate in Applied Science degree in Graphic Communications: English, 9 hours (including English 111, 112; 3 hours may be literature); physical education, 3 hours; social science or psychology, 9 hours; business mathematics, 4 hours; art, 5 hours; GRCO courses, 45 hours; advertising, 3 hours; journalism, 3 hours; electives, 9 hours (typing and speech recommended).

FIRST YEAR

	Qtr. Hrs.	Contact Hrs.
Fall Quarter		
English	3	33
Social Science	3	33
Physical Education	1	22
Graphic Arts I	3	44
Introduction to Graphic Communications		33
Art Elective	3	33
	16	198
Winter Quarter		
English	3	33
Social Science	3	33
Physical Education	1	22
Business Mathematics	4	44
Commercial Design and Layout	3	44
Art Elective	3	33
	17	209
Spring Quarter		
English or Literature	3	33
Human Relations	3	33
Physical Education	1	22
Basic Photography	3	44
Typesetting	3	55
	13	187

SECOND YEAR

	Qtr. Hrs.	Contact Hrs.
Fall Quarter		
Darkroom Procedure	3	55
Cold Type and Paste-up	3	55
Duplicating Offset I	3	55
Intro. to Journalism	3	33
Electives	5	55
	17	253
Winter Quarter		
Advertising	3	44
Process Photography II	3	55
Duplicating Offset II	3	55
Newspaper Practices	2	22
Cold Type and Paste-up	3	55
Elective	3	33
	17	264
Spring Quarter		
Graphic Communications Problems	4	66
Printing Estimating	4	33
Printing Plant Management	3	33
Elective	3	33
	13	165

GRCO 111 GRAPHIC ARTS I F 3 hrs.
This course is designed to develop competencies in the preparation of graphic materials.

GRCO 113 INTRODUCTION TO GRAPHIC COMMUNICATIONS F 3 hrs.
An introductory course to Graphic Arts Technology as related to reproduction through various printing techniques, including choice of printing method, type selection, paper selection, quantity and quality desired, and special finishing techniques available.

GRCO 121 TYPESETTING S 3 hrs.
A basic study of cold-type composing machines with emphasis on operation and production.

GRCO 151 BASIC PHOTOGRAPHY F 3 hrs.
Develops proficiencies in the production of black-and-white still photography, including camera and printmaking techniques.

GRCO 270 PROCESS PHOTOGRAPHY I F 3 hrs.
A study of the darkroom, its equipment, and functions. The chemistry of photography and film is studied and the student has an opportunity to become proficient at processing film.

GRCO 271 COLD-TYPE COMPOSITION AND PASTE-UP I F 3 hrs.
A basic study of cold-type composing involving the use of various composing machines. Also includes development of paste-up techniques, word spacing, type selection, use of white space and machine proficiency. Lab required.

GRCO 272 COLD-TYPE COMPOSITION AND PASTE-UP II W 3 hrs.
A more advanced study of cold-type composition and paste-up. Skills are developed in multiple form work and more complicated techniques are developed. Lab required. Prerequisite: GRCO 271.

GRCO 273 DUPLICATING — OFFSET I F 3 hrs.
Methods of printing and duplicating are introduced. Principles of offset duplicating explained and practiced.

GRCO 274 DUPLICATING — OFFSET II W 3 hrs.
Various machines explained and skills practiced. Long-runs, color and quality copy produced. Basic introduction to web offset press operation is included. Prerequisite: GRCO 273.

GRCO 275 COMMERCIAL DESIGN AND LAYOUT W 3 hrs.
A lecture and laboratory course in fundamental principles and techniques using a variety of both black-and-white and color media; pattern and design concepts are studied.

GRCO 276 PROCESS PHOTOGRAPHY II **W 3 hrs.**
Various techniques of camera, platemaking and darkroom work are developed. Also includes various methods of screening, masking and color separation. Lab required. Prerequisite: GRCO 270.

GRCO 277 GRAPHIC COMMUNICATIONS PROBLEMS **S 3 hrs.**
All skills developed by the student to produce work and solve problems that occur in the graphic arts field are practiced. This course is designed to develop the students' ability to deal with various situations on their own. Lab only — 6 hours. For Graphic Communications majors only.

GRCO 278 NEWSPAPER PRACTICES **W 2 hrs.**
A study of the technical problems and techniques dealing with the production of newspapers.

GRCO 279 PRINTING PLANT MANAGEMENT **S 3 hrs.**
A study of management techniques needed for printing, dealing especially with problems of work flow, rush orders, overtime, and other production matters.

GRCO 280 PRINTING ESTIMATING **S 3 hrs.**
A study of costs and cost-estimating techniques specifically related to the printing industry.

Law Enforcement Technology

(Police Science)

ASSOCIATE IN APPLIED SCIENCE

Newman

The rapid expansion of law enforcement has created a critical need for college-trained professionals who want a challenging and socially significant career. The program is designed to provide men and women with a solid background in law enforcement as well as offering in-service personnel an opportunity to upgrade their education.

Students completing this two-year program receive an Associate in Applied Science degree. Some of the classes are held in the evening in order to give employed law-enforcement officers the opportunity to avail themselves of this program. In addition to on-campus offerings, extension courses are available throughout Colorado West.

LAW ENFORCEMENT TECHNOLOGY CURRICULUM

FIRST YEAR

	Qtr. Hrs.	Contact Hrs.
Fall Quarter		
Introduction to Law Enforcement	3	33
Political Science	3	33
*Survey of Physical Science	3	33
English 111	3	33
Administration of Justice and Court Procedures	3	33
Physical Education	1	22
	16	187
Winter Quarter		
Survey of Physical Science	3	33
Political Science	3	33
Scientific Aids to Crime Detection	3	33
Police Patrol and Procedures	3	33
Physical Education	1	22
English 112	3	33
	16	187
Spring Quarter		
**Defensive Tactics and Firearms Training	3	33
English 113 or 115	3	33
Political Science	3	33
Survey of Physical Science	3	33
Police-Community Relations	3	33
Physical Education	1	22
	16	187

SECOND YEAR

	Qtr. Hrs.	Contact Hrs.
Fall Quarter		
Psychology	3	33
Laws of Arrest, Search, and Seizure	3	33
Sociology	3	33
Business Mathematics	4	44
State and Local Government	3	33
	16	176
Winter Quarter		
Investigative Techniques	3	33
Psychology	3	33
Sociology	3	33
**Photography	3	33
Juvenile Delinquency and Procedure	3	33
	15	165
Spring Quarter		
Psychology	3	33
Sociology	3	33
Speech	3	33
Special Problems in Law Enforcement	3	33
Criminal Law	3	33
	15	165

*Other Physical Sciences may be substituted.
**An elective.

POLC 111 ADMINISTRATION OF JUSTICE AND COURT PROCEDURES F 3 hrs.
An in-depth study of the role and responsibilities of each segment within the administration of justice system: law enforcement, judicial, corrections. A past, present and future exposure to each sub-system's procedures from initial entry to final disposition and the relationship each segment maintains with its system members.

POLC 112 INTRODUCTION TO LAW ENFORCEMENT F 3 hrs.
A study of the history and transition of law enforcement; various federal, state and local agencies and their respective jurisdictions; career opportunities and requirements; and law enforcement professionalism, ethics and conduct.

POLC 121 SCIENTIFIC AIDS TO CRIME DETECTION W 3 hrs.
A study of modern crime laboratory services and scientific aid to crime detection. Includes a general knowledge of fingerprints, impressions, chemical examinations, document examinations, handwriting comparisons, optical methods of analysis, and advanced instrumental methods of analysis.

POLC 122 POLICE PATROL AND PROCEDURES W 3 hrs.
Responsibilities, techniques, and methods of law-enforcement patrol in the protection of life and property. Includes an examination of reporting systems, communication systems, and law enforcement equipment.

POLC 132 POLICE-COMMUNITY RELATIONS S 3 hrs.
An in-depth exploration of the roles of the law-enforcement practitioners and their agencies. Through interaction and study, the student becomes aware of the interrelationship and role expectations among the various agencies and the public. Principal emphasis is placed upon the professional image of the law-enforcement system and development of positive relationships between members of the system and the public.

POLC 133 DEFENSIVE TACTICS AND FIREARMS S 3 hrs.
The study and practice of techniques and mechanics of arrest and self defense. An analysis of the legal and moral restrictions on the use of weapons or force by law enforcement officers. Firearms safety and the fundamentals of handgun shooting. Includes firing courses with the .38 caliber revolver.

POLC 141 BREATH-EXAMINER SPECIALIST FWS 3 hrs.
Designed to develop practical skills related to the breath-examiner specialist's duties. Areas include drinking-driver counter measures, basis of chemical testing, suspect processing, courtroom presentations and breath-equipment theory, operation and laboratory.

POLC 251 LAWS OF SEARCH AND SEIZURE F 3 hrs.
A study in detail of the United States and State Supreme Court decisions and laws relating to arrest, search and seizure by law enforcement officers. An examination of the methods by which a legal search may be made and the items which may be seized. A study of the proper preparations of search warrants and affidavits, and the execution and return thereof.

POLC 261 INVESTIGATION TECHNIQUES W 3 hrs.
An examination and study of the duties of the criminal investigator including the receiving of the complaint, approach to the crime scene, collection and preservation of evidence, recording of data at the crime scene, preparation and investigative reports, and case follow-up. Includes discussion on use of informants and methods of tracing fugitives.

POLC 271 JUVENILE DELINQUENCY AND PROCEDURE W 3 hrs.
A survey of the various federal and state statutes and courts involved in juvenile justice procedures. A discussion of the causes and effects of juvenile crime.

POLC 272 SPECIAL PROBLEMS IN LAW ENFORCEMENT S 3 hrs.
A study and analysis of special problems relating to the law enforcement officer and the community. Emphasis is placed in current problems including civil reights, riots and crowd control, organized crime, and relations with the public and press.

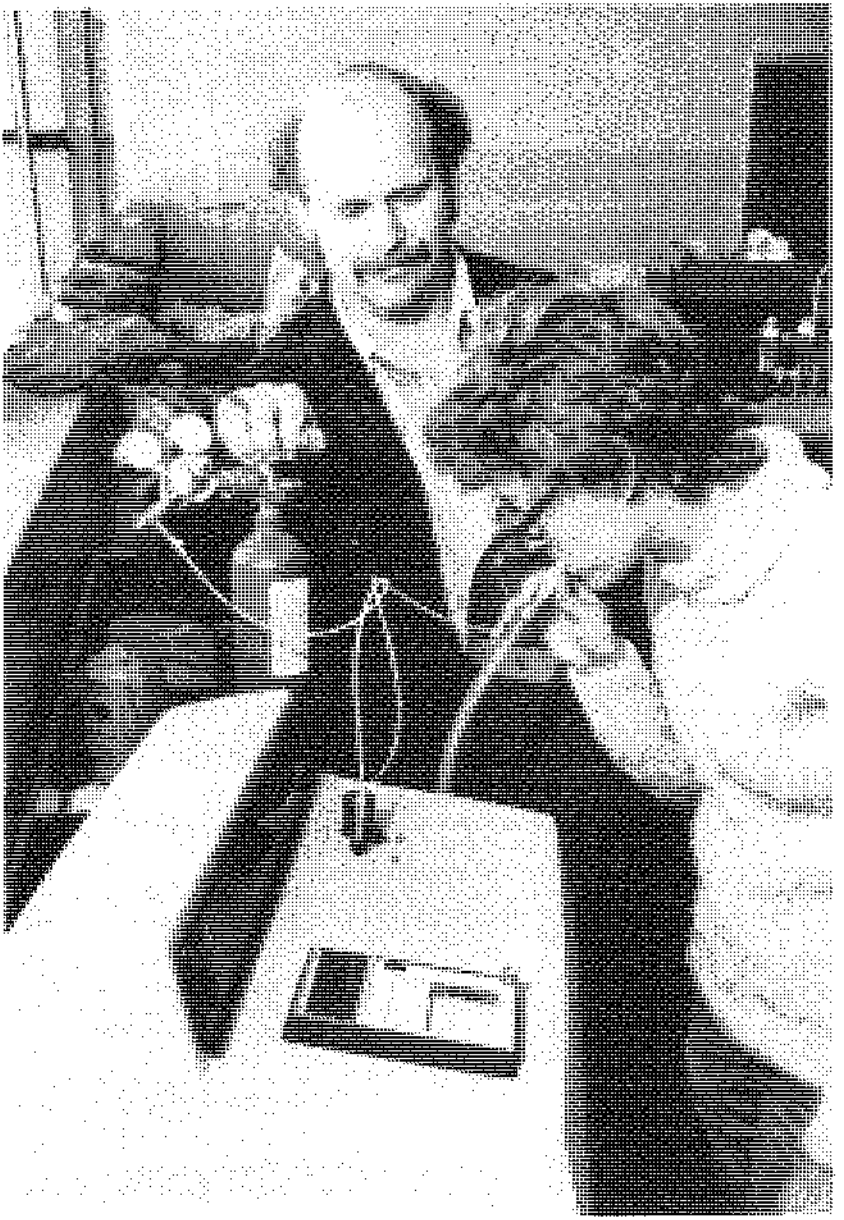
POLC 273 CRIMINAL LAW S 3 hrs.
An analysis of the origin and history of common law crimes, distinction between civil and criminal laws, and the distinction between federal and state laws and municipal ordinances. The recognition of criminal acts and their respective elements, covering both federal and state statutes.

POLC 275 POLICE SUPERVISION S 3 hrs.
The responsibility of the first-level supervisor in management, employee morale, discipline, position classification, compensation, selection and placement, training and performance rating, and techniques of leadership.

POLC 278 TRAFFIC CONTROL S 3 hrs.
Survey of the traffic problem, function of highway traffic management and administration, accident reconstruction and engineering techniques, vehicle transportation and law enforcement, traffic enforcement and the community.

POLC 281, 282, 283 INDEPENDENT STUDY IN LAW ENFORCEMENT **1-3 hrs.**

Designed for in-service students completing approved criminal justice seminars sponsored by approved institutions of higher learning. Permission to enroll must be obtained from the coordinator of the Law Enforcement Technology program. The coordinator in cooperation with the Director of Occupational Studies will determine the number of credit hours to be awarded upon proof of successful completion. As many as three credit hours may be approved.



Summer Session

Meso College offers a summer program based primarily upon needs and wishes expressed by students and residents of the community.

Typical offerings in previous summers have included courses in the areas of Biology and Home Economics, Business, Data Processing, Fine Arts, Humanities, Mathematics and Engineering, Physical Education, Physical Science, Social Science, and Occupational Education.

A prescribed minimum of students is required to justify offering any particular course.

This program operates on an eight-week schedule divided into two four-week sessions, with classes being held in forenoons only. The 1977 Summer Session will begin Monday, June 20.

Tentative bulletins on Summer Session offerings are usually available from the Director of Summer Session or from the Director of Admissions during Winter Quarter.

The following courses were offered during the 1976 Summer Session and probably will be offered, along with others, during Summer 1977.

Course No.	Title
Biological Science and Home Economics	
BIOL 111	Human Anatomy and Physiology
HEC 212	Nutrition
Business	
BUAC 101	Principles of Accounting
BUAC 231	Cost Accounting
BUAC 201	Principles of Accounting
BUAC 331	Governmental Accounting
BUGB 101	Introduction to Business
BUMA 121	Human Relations
BUMA 131	Advertising
BUGB 241	Personal Finance
BUGB 221	Insurance
BUGB 141	Business Mathematics
BUGB 211	Business Communications
BUDP 101	Introduction to Data Processing
BUDP 111	Keypunch
BUDP 211	Production Keypunch
BUMA 101	Principles of Management
BUMA 102	Internal Business Organizational Structure
BUMA 411	Business Policies and Management
BUOA 111	Shorthand Theory
BUOA 151, 152	Beginning and Intermediate Typewriting
BUJT	Job Entry Training
Fine Arts	
ART 151, 152	Drawing
ART 245	Ceramics — Potter's Wheel
DRAM 114	Summer Theatre
Humanities	
EDUC 251	Introduction to Education
ENGL 110	English Grammar
ENGL 111	English Composition
ENGL 112	English Composition
ENGL 113	English Composition
ENGL 121	Spelling
ENGL 122	Word Study
LIT 121	Children's Literature
LIT 131	World Literature
LIT 132	World Literature
LIT 133	World Literature
LIT 134	Mythology (Classical)
LIT 135	Mythology (Medieval)
LIT 146	Afro-American Literature
LIT 251	English Literature
LIT 254	Introduction to Shakespeare
LIT 261	U.S. Literature
LIT 325	Short Story II
SPCH 101	Interpersonal Communications
Computer Science, Mathematics and Engineering	
ENGR 105	Basic Engineering Drawing
ENGR 114	Introduction to Fortran Programming
MATH 015	Basic Mathematics
MATH 020	Basic Algebra
MATH 121	Mathematical Foundations of Business
MATH 131	College Algebra
MATH 138	College Algebra and Trigonometry
MATH 139	College Algebra and Trigonometry II
MATH 140	Trigonometry
STAT 200	Statistics
Physical Education and Recreation	
PER 111	Swimming
PER 113	Bowling
PER 114	Golf
PER 120	Tennis
PER 382	Camp Counseling Dance Workshop
Physical Science	
CHEM 121	General Chemistry
CHEM 141	Introductory Inorganic, Organic and Physiological Chemistry
GEOL 321	General Field Procedures
GEOL 322	Field Problems
INDI 411	San Juan Symposium
Social Science	
ANTH 101	Introduction to Anthropology
ANTH 102	Introduction to Anthropology
ANTH 103	Introduction to Anthropology
GEOG 101	Introduction to Geography
HIST 104	History of Eastern Civilization
HIST 120	History of Colorado
HIST 131	United States History
HIST 132	United States History

(Summer course listing continued on next page)

Course No.	Title
POLS 101	American Government
PSY 121	General Psychology
PSY 122	General Psychology
PSY 133	Human Growth and Development
PSY 254	Educational Psychology
PSY 310	Child Psychology
PSY 422	Sensation and Perception
SOC 144	Marriage and Family
SOC 261	General Sociology
SOC 262	General Sociology
SOC 263	Social Problems

Occupational Education

ABF	Auto Body and Fender
AMEC	Small Engine Repair
AMEC	Auto Mechanics
WELD	Welding
OCSP	Occupational Guidance Courses
ELIN	Electric Lineman Courses
POLC	Police Science Courses

Continuing Education

"It's Never too Late to Learn"

One of Mesa College's finest traditions is providing special opportunities for adults of the community to participate in academic, vocational, cultural, and recreational activities according to their needs, interests, or desire to learn. The Office of Continuing Education serves thousands of residents each year through offerings that include cultural, informational, vocational, basic education, and general education courses, self-improvement and hobby classes, recreation groups, parent-education and preschool classes, and public forums and discussion groups concerned with timely topics.

Most of these offerings are provided in the evenings for either credit or no-credit and for varying lengths of time. Many regular day students register for night classes to facilitate schedules or to provide free time during the day for part-time job opportunities. Learning activities are varied and include discussions, demonstrations, laboratories, shop work, and field trips. Members of the regular Mesa College faculty are utilized in the evening program along with many qualified guest instructors from business, industry, the arts, and other academic institutions who add new experience and lend greater interest to the various offerings.

Through the College's cultural programs, regular students have opportunity to participate with adults of the community in various musical groups, including the Mesa College Civic Symphony Orchestra and the Mesa College Community Choir.

The College cooperates with various other colleges and universities of the state in providing facilities for on-campus and off-campus extension classes and other services. Most of the courses made available through this arrangement are at the upper-division or graduate level.

Governing Board and Administration

BOARD OF TRUSTEES OF STATE COLLEGES IN COLORADO

S. AVERY BICE ..... Fort Collins
JOHN D. EDDY ..... Grand Junction
BETTY I. NAUGLE, Vice-President of the Board ..... Denver
STEVE SCROGGINS (Student Member) ..... Grand Junction (Mesa College)
IRENE SWEETKIND, President of the Board ..... Gunnison
M. EDMUND VALLEJO ..... Pueblo
PHILIP A. WINSLOW ..... Colorado Springs
GEORGE W. WOODARD ..... Alamosa
JOHN A. MARVEL, President of the State College System ..... Denver

STATE COLLEGES IN COLORADO

Adams State College ..... Alamosa
John Turano, Acting President
Mesa College ..... Grand Junction
John U. Tomlinson, President
Metropolitan State College ..... Denver
James D. Palmer, President
University of Southern Colorado ..... Pueblo
Harry P. Bawes, President
Western State College ..... Gunnison
John P. Mellon, President

MESA COLLEGE STAFF OFFICIALS

General Services

JOHN U. TOMLINSON (1975), President; B.A., M.S., Fort Hays Kansas State College; Ph.D., University of Kansas.

CARL R. WAHLBERG, JR. (1972), Vice-President for External Affairs; B.A., M.A., Ed.D., University of Denver.

NATHAN E. BRUNDRIDGE (1967), Director of Special Projects; B.S., M.Ed., Colorado State University.

CARL R. COOK (1968), Director of Data Processing Services; International Business Machines School.

WALLACE DOBBINS (1958), Director of Information Services; B.Ed., Colorado State University; M.A., Western State College.

Business Services

RICHARD D. APPEL, C.P.A. (1966-67, 1969), Vice-President for Administrative Affairs; B.A., Fort Hays Kansas State University.

GARY R. CALHOUN (1970), Business Manager; B.S.B.A., University of Denver.

WILLIAM C. CONKLIN (1972), Director of Physical Plant.

JOHN C. (JACK) KESTER (1966), Purchasing Officer; A.S., Mesa College.

ELAINE INGVERTSEN (*1970, 1975), Assistant Purchasing Officer; A.A., Mesa College.

DOUGLAS G. TUCKER (1975), Payroll Accountant/Personnel Coordinator; B.A., Western State College.

Instructional Services

H. HERBERT WELDON (1946), Professor of Mathematics, Vice-President for Academic Affairs; B.A., M.A., Western State College.

DONNA I. DAUENHAUER (1976), Acting Director of Media Services; B.S., Miami University; M.S., Indiana University.

J. RICHARD GARCIA (1975), Administrative Assistant for Academic Affairs; B.S., Colorado State University.

(Figures in parentheses indicate year of regular appointment to Mesa College professional staff for half-time service or more. Prior temporary or part-time service is not indicated.)

*Date of first employment in another classification.

ALFRED J. GOFFREDI (1948), Professor of Business, Director of Occupational Studies; Director of Area Vocational School; B.A., M.A., Western State College.
CHARLES R. HENDRICKSON (1967), Director of Media Services; B.A., M.A., University of Northern Colorado.
KEITH W. MILLER (1965), Director of Continuing Education; B.A., M.A., University of Northern Colorado.
BETSY A. SNEED (1968), Registrar; B.S., East Texas State University; M.A., Adams State College.
MARTIN A. WENGER (1968), Director of Library Services; B.A., University of Utah; M.L.S., University of Oklahoma.
EILEEN M. WILLIAMS, R.N. (1968), Professor of Nursing, Assistant Director Area Vocational School, Chairwoman, Division of Health Programs; B.S., University of Denver; M.S., University of Colorado.
ROBERT D. YOUNGQUIST (1966), Assistant Professor of Business, Director of Summer Session; B.S.B.A., University of Denver; M.Ed., Colorado State University.

†Division Chairmen

Biological Sciences and Home Economics, Robert R. Rice (1966).
Business, James C. Carstens (1962).
Computer Science, Mathematics and Engineering, James C. Davis (1957).
Fine Arts, Darrell C. Blackburn (1957).
Health Programs, Eileen M. Williams, R.N. (1968).
Humanities, Don M. Showalter (1957-59, 1961).
Physical Education and Recreation, Wayne W. Nelson (1955).
Physical Science, William E. Putnam (1961).
Social Science, Donald A. MacKendrick (1956).
Trade and Industrial Programs, Harold R. Bolton (1970).

†Department Heads

Art, Donald E. Meyers (1962).
Speech and Drama, William S. Robinson (1960).

Student Services

JAY W. TOLMAN (1946), Professor of Geology, Vice-President for Student Affairs; B.S., M.S., Utah State University.
RICHARD E. BACA (1972), Counselor, Special Staff Consultant; B.S., University of Colorado.
RAY L. BIGGS (1976), Director of Housing; B.S., Montana State University; M.Ed., Colorado State University.
TILMAN M. BISHOP (1962), Director of Guidance; B.A., M.A., University of Northern Colorado.
JOHN J. (JAY) JEFFERSON (1967), Director of College Center; B.A., M.A., Adams State College.
ELLEN P. JONES (1976), Counselor; B.A., M.Ed., Ed.S., University of Florida.
FRANK KELLER (1973), Assistant Director of College Center; B.A., Adams State College.
LANCE M. OSWALD (1974), Counselor; B.S., M.S., University of Wisconsin.
C. A. (JACK) SCOTT (1963), Director of Admissions; B.A., University of Northern Colorado; M.A., University of Denver.
MARION E. SHAW (1970), Director of Job Development and Placement; B.S., M.Ed., Colorado State University.
LIONEL W. (BUD) SMOCK (1967), Director of Financial Aids and Student Employment; B.A., M.A., Western State College.
HELEN M. SPEHAR, R.N. (1974), Director of Student Health Center; B.S., University of Colorado.
ROBERT P. STOKES (1970), Director of Career Center and Vocational Guidance; B.A., Western State College; M.A., Colorado State University.
ANN M. VANDERTOOK [*1966; 1969], Bookstore Manager.
RAYMOND ALAN WORKMAN (1967-68, 1971), Counselor, Coordinator of Student Activities; B.A., University of Northern Colorado; M.P.S., Ed.D., University of Colorado.

Library Staff

MARTIN A. WENGER (1968), Director of Library Services; B.A., University of Utah; M.L.S., University of Oklahoma.
ELIZABETH M. (BETTY) GOFF (1965), Assistant Professor of Library Science, Circulation Librarian; B.A., University of Colorado; M.A., University of Denver.
PAULINE O. MESSENGER (1961), Professor of Library Science, Reference Librarian; B.A., Bethany College; M.S., Emporia Kansas State College.
KATHLEEN R. TOWER (1972), Instructor of Library Science, Catalog Librarian; B.M.E., M.A., University of Denver.

†See individual listings under Instructional Personnel.
*Date of first employment in another classification.

Instructional Personnel (1976-77 Faculty)

HERMAN C. ALLMARAS (1963), Associate Professor of Physics; B.S., University of Wisconsin; M.S., New Mexico Highlands University.

NICHOLAS T. ANDERSON (1976), Instructor of Business; B.B.A., Eastern New Mexico University; M.B.A., University of Denver.

DANIEL J. AROSTEGUY (1976), Assistant Professor of Economics; B.S., M.S., University of Nevada, Reno; Ph.D., Colorado State University.

CHARLES W. BAILEY (1965), Associate Professor of Mathematics; B.A., M.A., University of Northern Colorado.

BRUCE A. BAUERLE (1972), Associate Professor of Biology; B.A., University of Kansas; M.S., University of Missouri — Kansas City; D.A., University of Northern Colorado.

VIRGINIA L. BEEMER (1968), Instructor of Education; B.S., Northern Arizona University.

WALTER F. BERGMAN (1950), Associate Professor of Physical Education; B.S., M.Ed., Colorado State University.

RICHARD L. BERKEY (1967), Assistant Professor of English; B.A., Fort Lewis College; M.A., Eastern New Mexico University.

WALTER J. BIRKEDAHL (1967), Associate Professor of Music; B.Mus.Ed., M.Mus.Ed., University of Denver.

DARRELL C. BLACKBURN (1957), Professor of Music; Chairman, Division of Fine Arts; B.Mus.Ed., M.Mus.Ed., University of Colorado.

ORVILLE L. BOGE (1956), Professor of Chemistry; B.A., M.A., University of Northern Colorado.

HAROLD R. BOLLAN (1970), Assistant Professor of Applied Technology (Auto Body and Fender); Chairman, Division of Trade and Industrial Programs; B.S., Southern Utah State College.

LORRAINE N. BOSCHI (1961-62, 1970), Associate Professor of English; B.A., Ohio State University; M.A., Ohio University.

WILLIAM T. BRANTON (1970), Assistant Professor of Applied Technology (Welding); Certified Instructor, State Board for Community Colleges and Occupational Education.

JAMES K. BREYLEY, JR. (1975), Instructor of Business Administration; B.A., Illinois Northwestern University; M.S., Colorado State University.

CLIFFORD C. BRITTON (1964), Associate Professor of Mathematics; B.A., Adams State College; M.A., San Diego State College.

C. JAMES BUCKLEY, C.P.A. (1972), Associate Professor of Accounting; B.A., Western State College; M.S., Colorado State University.

TENNIE ANN CAPPS (1964), Assistant Professor of Office Administration; B.S., M.Bus.Ed., University of Oklahoma.

PERRY H. CARMICHAEL (1969), Assistant Professor of Speech; B.A., M.A., Western State College.

VIRGINIA T. (TESS) CARMICHAEL (1973), Instructor of Office Administration; B.A., Western State College.

JOYCE CARRIGAN (1976), Instructor of Office Administration; B.S., M.Ed., Colorado State University.

JAMES C. CARSTENS (1962), Professor of Business Administration; Chairman, Division of Business; B.A., M.A., Western State College; Ph.D., Colorado State University.

JOHN D. CHARLESWORTH (1970), Assistant Professor of Applied Technology (Auto Mechanics); Certified Instructor, State Board for Community Colleges and Occupational Education.

PHYLLIS L. CHOWDHRY (1976), Assistant Professor of Biology; B.S., University of Denver; M.N.S., Arizona State University.

JAMES C. DAVIS (1957), Professor of Mathematics; Chairman, Division of Computer Science, Mathematics, and Engineering; B.A., M.A., University of Northern Colorado.

DOUGLAS T. DeVINNY (1975), Adjunct Assistant Professor of Art; B.A., Colorado State University; M.F.A., Indiana University.

DALE L. DICKSON (1969), Assistant Professor of Business Administration; B.S.B.A., University of Denver; M.Ed., Colorado State University.

MATTS G. DJOS (1976), Assistant Professor of English; B.A., University of Washington; M.A., University of Idaho; Ph.D., Texas A.&M. University.

DAVID R. DUFF (1973), Assistant Professor of Applied Technology (Graphic Communications); B.A., Colorado State University.

CAROL R. EDMONDS (1976), Instructor of English; B.A., University of Colorado; M.S., Columbia University Graduate School of Journalism.

MARIE JOYCE EICHER, R.N. (1973), Associate Professor of Nursing; B.S., Union College; M.S., University of Colorado.

KEITH L. FASNACHT (1974), Instructor of Applied Technology (Welding); B.S., Utah State University.

CHARLES R. FETTERS (1976), Instructor of Applied Technology (Electronics); B.S., New Mexico State University.

PATRICIA A. FINK (1966), Associate Professor of Psychology; B.A., M.A., University of Northern Colorado.

DELL R. FOUTZ (1972), Associate Professor of Geology; B.S., M.S., Brigham Young University; Ph.D., Washington State University.

JOSE ELI FRESQUEZ (1971), Instructor of Applied Technology (Auto Mechanics); Certified Instructor, State Board for Community Colleges and Occupational Education.

RICHARD R. FROHOCK (1963), Associate Professor of English; B.A., William Jewell College; M.A., University of Oregon.

JOHN A. FYNN (1966), Associate Professor of Physics; B.S., M.S., University of Denver.

JOSE L. GALLEGOS (1976), Assistant Professor of English; B.A., Western State College; M.A., University of Colorado.

JUDY L. GOODHART, R.N. (1976), Adjunct Instructor of Nursing; B.S.N., Loretta Heights College; M.S.N., University of Colorado.

THOMAS D. GRAVES (1966), Professor of Education; B.A., M.A., Adams State College; Ed.D., University of Northern Colorado.

MAEBETH GUYTON (1971), Instructor of Music; B.F.A., University of New Mexico.

DONNA K. HAFNER (1967), Assistant Professor of Mathematics; B.A., University of Northern Colorado; M.A.T., Colorado State University.

BRUCE O. HAROLDSON (1974), Assistant Professor of Physical Education; B.S., Augustana College; M.Ed., University of Oregon.

JAMES T. HARPER (1962), Professor of Economics; B.A., Central Methodist College; M.A., J.D., University of Colorado.

MARGARET H. HARPER (1963), Instructor of Office Administration; B.S., Central Methodist College.

EDWIN C. HAWKINS (1963), Associate Professor of Mathematics; B.A., M.A., University of Northern Colorado.

JOHN G. HENSON (1963), Associate Professor of Mathematics; B.S., Texas Tech University; M.A.T., Colorado State University.

BILLY O. HIGHTOWER (1967), Assistant Professor of Psychology; B.A., M.A., Western Kentucky University.

ROBERT B. HILL (1972), Instructor of Applied Technology (Welding); Certified Instructor, State Board for Community Colleges and Occupational Education.

CHRISTOPHER M. HOLLOWAY (1968), Associate Professor of History; B.A., California State University, Los Angeles; M.A., University of Colorado.

MADGE E. HUFFER (1965), Associate Professor of Speech; B.A., Sioux Falls College; M.A., University of Northern Colorado.

CHEO HUMPHRIES (1962), Assistant Professor of Physical Education; B.S., Indiana University.

EDWARD C. HURLBUT (1976), Assistant Professor of Biology; B.A., Western State College; M.S., Purdue University; Ph.D., University of Missouri — Columbia.

E. BRUCE ISAACSON (1975), Instructor of Business; Kearney State College.

ELDON C. JOHNSON (1976), Assistant Professor of Business; B.A., M.A., University of Northern Colorado; Ed.D., New Mexico State University.

JAMES B. JOHNSON (1967), Associate Professor of Geology; B.A., University of Colorado; M.S., University of Utah.

ROBERT L. JOHNSON (1962), Associate Professor of Education; B.A., M.A., Western State College.

VERNER C. JOHNSON (1976), Assistant Professor of Geology; B.A., M.S., Southern Illinois University; Ph.D., University of Tennessee at Knoxville.

LLOYD B. JONES (1947), Professor of Psychology; B.A., M.A., Western State College.

RANDY EARL KEITH (1975), Assistant Professor of Chemistry; B.S., M.S., Cleveland State University; Ph.D., Colorado State University.

CARL M. KERNS (1969), Assistant Professor of Mathematics; B.A., Western State College; M.S., University of Oregon.

MARY J. KOENINGER (1976), Instructor of Music, Acting Director of Bands; B.M., M.M., University of Texas at Austin.

MATTHEW KOSTEN (1976), Instructor of Applied Technology (Diesel Hydraulics and Auto Mechanics); Certified Instructor, State Board for Community Colleges and Occupational Education.

JAMES L. KRAMER, P.E. (1976), Instructor of Engineering; B.S.(Arch.E.), University of Colorado.

DORIS R. LAY (1965), Associate Professor of English; B.A., M.A., Western State College.

DIANA C. LEAPLEY (1976), Assistant Professor of Physical Education; B.A., Illinois State University; M.S., Indiana University; Ph.D., University of Iowa.

MAURINE M. LEIGHTON (1959), Professor of Home Economics; B.S., Oklahoma State University; M.H.E., Colorado State University.

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DONNA GUNSAULLUS, Oboe, English Horn
JOANN HALL, Piano
KERRY HENSON, Percussion
MARGARET HUTTON, Piano, Organ
MARION JACOBS, Trumpet
TED LORTS, Voice
ELIZABETH MOROSOW, Piano
CHARLES MYERS, Piano
JOHN PETERSON, Violin
ALLEN PORTER, Flute
PAT RILEY, Guitar
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GEORGIA WATKINS, Flute
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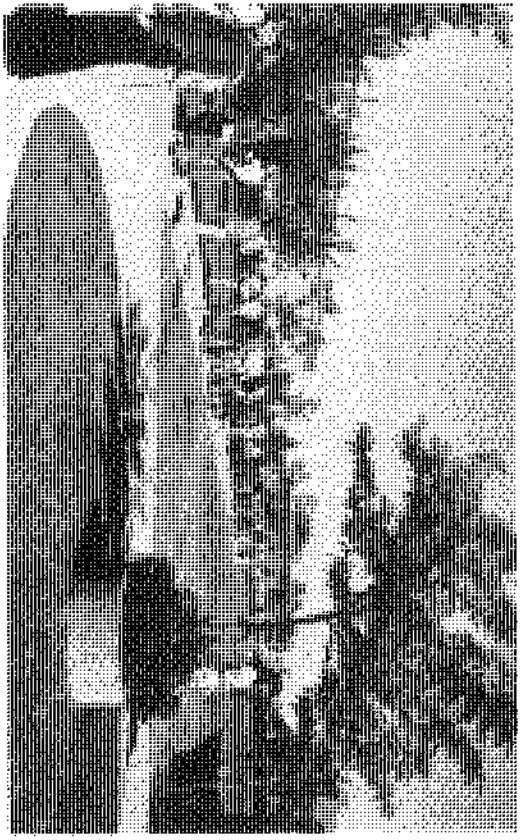

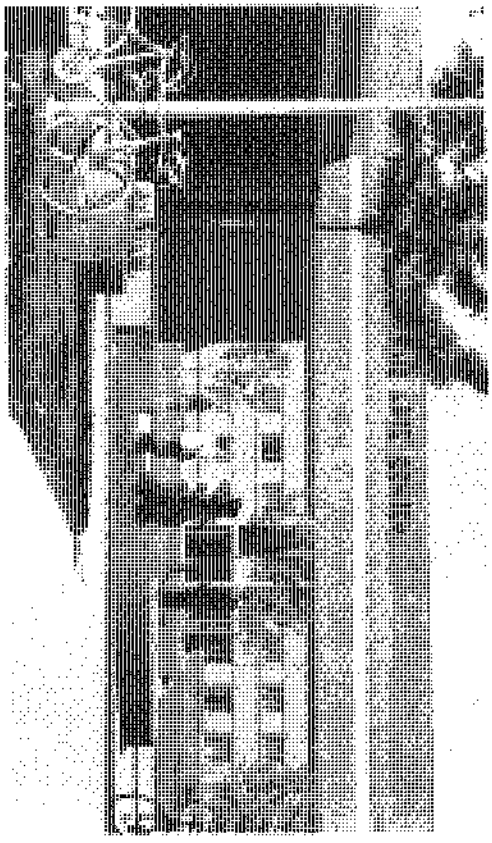

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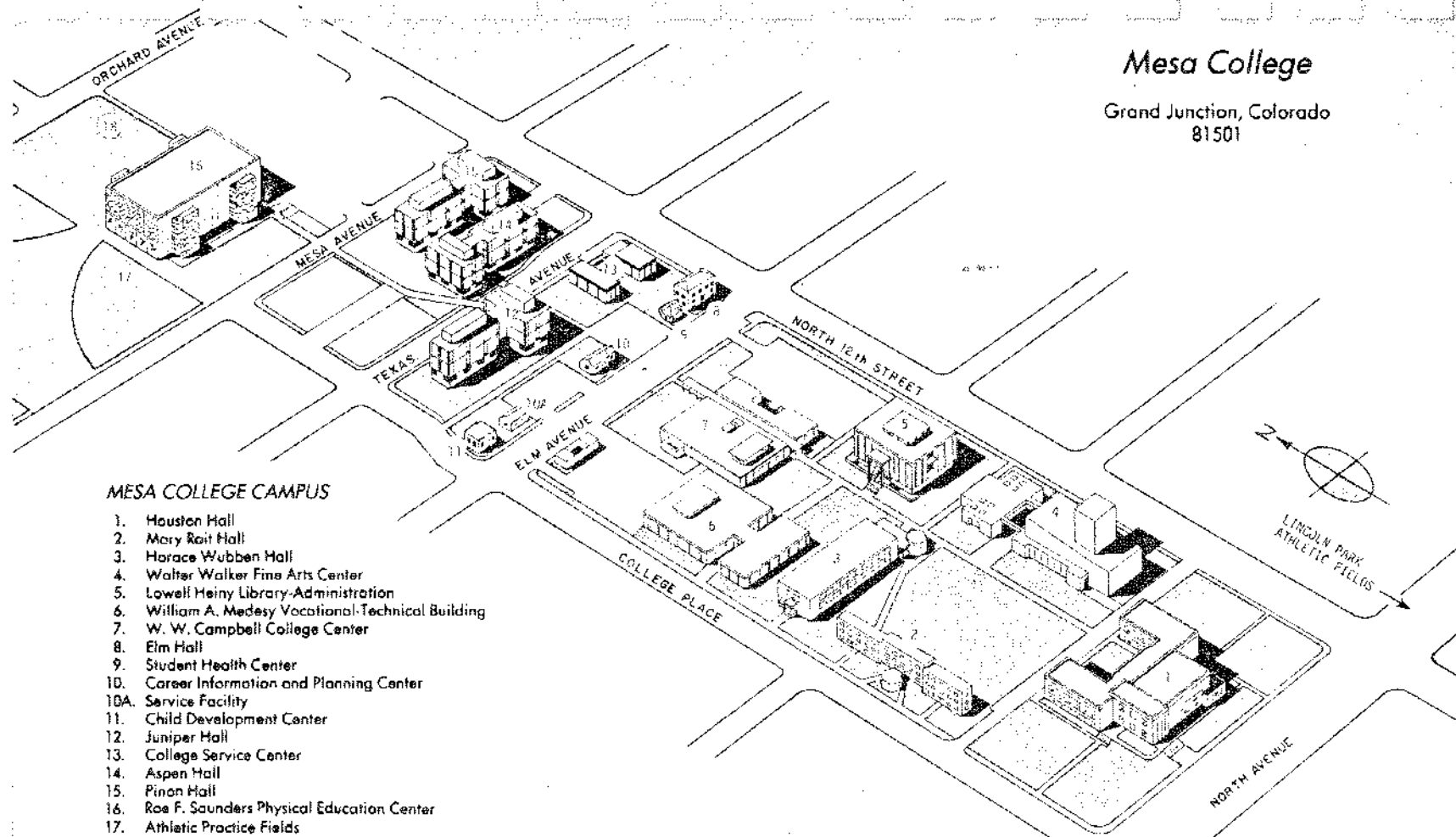

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