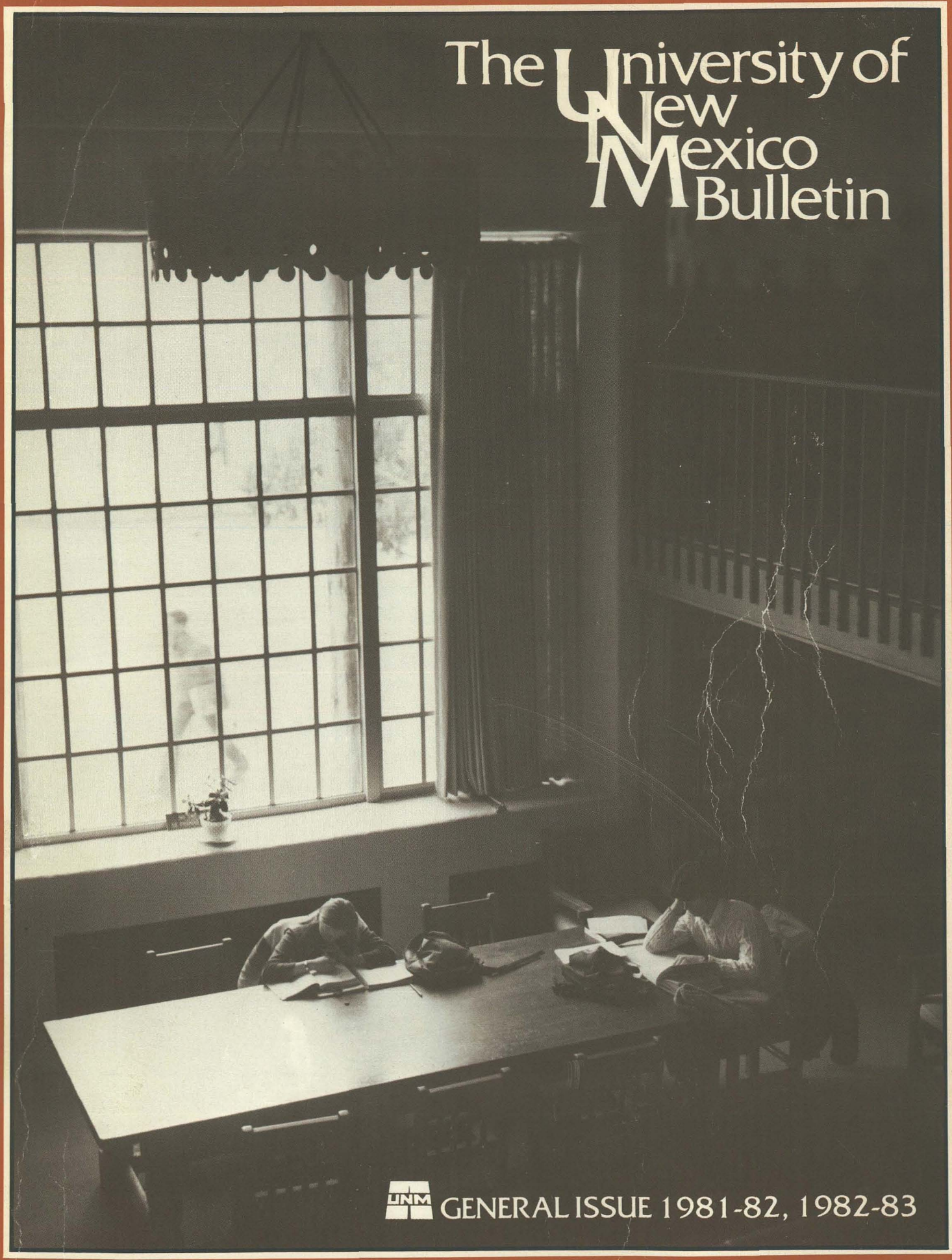
# The University of New Mexico Bulletin



GENERAL ISSUE 1981-82, 1982-83

# EQUAL EDUCATIONAL OPPORTUNITY POLICY

The University of New Mexico is committed to providing equal educational and employment opportunity regardless of sex, marital or parental status, race, color, religion, age, national origin, or physical handicap. Title IX of the Educational Amendments of 1972, prohibits discrimination on the basis of sex in any educational program or activity receiving federal financial assistance by way of grant, contract, or loan. Title VI of the Civil rights Act of 1964, is similar in its prohibition of discrimination on the basis of race, color, or national origin and section 504 of the Rehabilitation Act of 1973 prohibits discrimination against qualified handicapped persons. Equal educational opportunity includes: admission, recruitment, extracurricular programs and activities, housing, facilities, access to course offerings, counseling and testing, financial assistance, employment, health and insurance services, and athletics.

Responsibility for equal employment and educational opportunity throughout the University rests with the President. The President has appointed Bernie Sanchez, Affirmative Action Director, and has assigned responsibility to him for promoting and encouraging progress in meeting the University's equal opportunity goals. All grievances, questions or requests for information should be referred to the Affirmative Action Office, 1700 Las Lomas NE, 277-5251.

This catalog is designed primarily to describe the undergraduate programs, courses of instruction, and academic regulations of The University of New Mexico.

The provisions of this catalog are not to be regarded as an irrevocable contract between the student and the University. The University reserves the right to change any provisions or requirements at any time within the student's term of residence.

It is the policy of the University that "no person . . . shall, on the ground of race, color, national origin, sex, marital status, age or religion be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity . . ."

If, after reading this catalog, you require any additional information, please write to the Dean of Admissions and Records, The University of New Mexico, Albuquerque, New Mexico 87131, or telephone Admissions Office, Area Code 505, 277-2446.

# DIRECTIONS FOR CORRESPONDENCE

The post office address of The University of New Mexico is Albuquerque, New Mexico 87131. Requests for specific information should be directed as follows:

GENERAL INFORMATION, ADDITIONAL LITERATURE, ENTRANCE CREDENTIALS (other than Graduate Studies, School of Law, and School of Medicine), CALENDAR, REGISTRATION, ACADEMIC MATTERS ..... Dean of Admissions and Records

ADMISSIONS (other than Graduate Studies, Law School, and Medical School) ..... Dean of Admissions and Records

GRADUATE STUDIES (Admissions and General Information) ..... Dean of the Graduate School

SCHOOL RELATIONS ..... Director of School Relations

SCHOOL OF LAW (Admissions and General Information) ..... Dean of the School of Law

SCHOOL OF MEDICINE (Admissions and General Information) ..... Dean of the School of Medicine

SUMMER SESSION ..... Dean of Admissions and Records

ANTHROPOLOGY FIELD SESSION ..... Chairperson of the Department of Anthropology

APPLICATIONS FOR ADMISSION TO FIELD SESSIONS ..... Dean of Admissions and Records

EVENING NON-CREDIT COURSES ..... Division of Continuing Education and Community Services

HOUSING INFORMATION-DORMITORIES AND MARRIED HOUSING ..... Housing Collections

SCHOLARSHIPS AND LOANS ..... Director of Student Aids

STUDENT EMPLOYMENT ..... Director of Student Aids

AIR FORCE RESERVE OFFICERS TRAINING CORPS ..... Air Force ROTC Unit

NAVAL RESERVE OFFICERS TRAINING CORPS ..... Executive Officer, Naval ROTC Unit

VETERAN'S INFORMATION ..... Veterans Affairs Officer

EXPENSES ..... Comptroller

INDEPENDENT STUDY AND EXTENSION COURSES ..... Division of Continuing Education and Community Services

STUDENT AFFAIRS ..... Vice President for Student Affairs, Alumni Relations, and Development

PERSONAL WELFARE ..... Dean of Students

ACADEMIC ADVISEMENT ..... College Offices

TESTING ..... Testing Division

GIFTS, GRANTS, AND BEQUESTS ..... Director of Development

University office hours are, in general, 8:00 to 12:00 and 1:00 to 5:00 Monday through Friday. Office hours of the University Cashier are 8:30 to 4:00 Monday through Friday. Administration offices are open during most of the days of the official student recess periods.

This volume was produced by The University of New Mexico Office of Admissions and Records. Editing was done by Laura Grissom. Steve Rhodes, Publications Office, was responsible for cover design and art work. The type face used throughout the publication is Helios.

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## 1981 Summer Session 1981

**Undergraduate Applications and Credentials should be in the Admissions Office not later than one week before classes begin.**

Instruction begins; Late Registration Fee applies.
8-Week Term ..... June 8, Mon.
First 4-Week Term ..... June 8, Mon.
Second 4-Week Term ..... July 6, Mon.
Late Registration closes; last day for addition to program.
8-Week Term ..... June 12, Fri.,5 p.m.
First 4-Week Term ..... June 9, Tues.,5 p.m.
Second 4-Week Term ..... July 7, Tues.,5 p.m.
Last day for change in grading option.
8-Week Term ..... June 19, Fri.,5 p.m.
First 4-Week Term ..... June 12, Fri.,5 p.m.
Second 4-Week Term ..... July 10, Fri.,5 p.m.
Last day for withdrawal from courses without grade and without college or school approval.
8-Week Term ..... June 26, Fri.,5 p.m.
First 4-Week Term ..... June 17, Wed.,5 p.m.
Second 4-Week Term ..... July 15, Wed.,5 p.m.
Independence Day, holiday ..... July 3, Friday
Session ends
8-Week Term ..... July 31, Fri., 10 p.m.
First 4-Week Term ..... July 2, Thurs., 10 p.m.
Second 4-Week Term ..... July 31, Fri., 10 p.m.

## 1981 Fall Semester 1981

**Undergraduate Applications and Credentials should be in the Admissions Office not later than August 1.**

Instruction begins; Late Registration
Fee applies ..... Aug. 24, Mon
Late Registration closes ..... Aug. 28, Fri., 5 p.m.
End of Second Week; last day for additions to programs of registered students ..... Sept. 4, Fri., 5 p.m.
Labor Day, holiday ..... Sept. 7, Mon.
End of Fourth Week; last for change in grading option ..... Sept. 18, Fri.,5 p.m.
End of Sixth Week; last day for withdrawal from courses without grade and without approval of college or school ..... Oct. 2, Fri.,5 p.m.
Homecoming, holiday ..... Oct. 10, Sat
Midsemester ..... Oct. 16, Fri.
Thanksgiving Recess begins .. Nov. 25, Wed.,10 p.m.
Classes Resume ..... Nov. 30, Mon.,7:30 a.m.
*Closed Period ..... Dec. 7, Mon.-Dec. 19, Sat.
*Pre-examination Week Dec. 7, Mon.-Dec. 13, Sun.
*Semester Final Examinations Dec. 14, Mon.-Dec. 19, Sat.
Semester ends; last day for removal of Incomplete grade (5 p.m.,Fri.); Winter Recess begins Dec. 19, Sat., 10 p.m.

## 1982 Spring Semester 1982

**Undergraduate Applications and Credentials should be in the Admissions Office not later than January 1.**

Instruction begins; Late Registration Fee applies ..... Jan. 18, Mon.
Late Registration closes ..... Jan. 22, Fri., 5 p.m.
End of Second Week; last day for additions to programs of registered students .... Jan. 29, Fri., 5 p.m.
End of Fourth Week; last day for change of grading option ..... Feb. 12, Fri., 5 p.m.
End of Sixth Week; last day for withdrawal from courses without grade and without approval of college or school ..... Feb. 26, Fri., 5 p.m.
Midsemester ..... Mar. 12, Fri.
Spring Recess begins ..... Mar. 13, Sat., 10 p.m.
Classes resume ..... Mar. 22, Mon., 7:30 a.m.
Honors Assembly ..... To be arranged
*Closed Period ..... May 3, Mon.-May 15, Sat.
*Pre-examination Week May 3, Mon.-May 9, Sun.
*Semester Final Examinations May 10, Mon.-May 15,Sat.
Semester ends; last day for removal of Incomplete grade (5p.m., Fri.); Summer Recess begins May 15, Sat., 10 p.m.
Commencement ..... May 16, Sun., 7:30 p.m.

# 1982-83 ACADEMIC CALENDAR

## 1982 Summer Session 1982

**Undergraduate Applications and Credentials should be in the Admissions Office not later that one week before classes begin.**

Instruction begins; Late Registration Fee applies
8-Week Term ..... June 7, Mon.
First 4-Week Term ..... June 7, Mon.
Second 4-Week Term ..... July 6, Tues.
Late Registration closes; last day for additions to program.
8-Week Term ..... June 11, Fri., 5 p.m.
First 4-Week Term ..... June 8, Tues., 5 p.m.
Second 4-Week Term ..... July 7, Wed., 5 p.m.
Last day for change in grading option.
8-Week Term ..... June 18, Fri., 5 p.m.
First 4-Week Term ..... June 11, Fri., 5 p.m.
Second 4-Week Term ..... July 9, Fri., 5 p.m.
Last day for withdrawal from course without grade and without college or school approval.
8-Week Term ..... June 25, Fri., 5 p.m.
First 4-Week Term ..... June 16, Wed., 5 p.m.
Second 4-Week Term ..... July 14, Wed., 5 p.m.

* Pre-examination Week and Semester Final Examination Week are closed to extracurricular and social campus activities.

Independence Day, holiday ..... July 5, Mon.
Session Ends.
8-Week Term ..... July 30, Fri., 10 p.m.
First 4-Week Term ..... July 2, Fri., 10 p.m.
Second 4-Week Term ..... July 30, Fri., 10 p.m.

## 1982 Fall Semester 1982

**Undergraduate Applications and Credentials should be in the Admissions Office no later than August 1.**

Instruction begins; Late Registration
Fee applies ..... Aug. 23, Mon.
Late Registration closes ..... Aug. 27, Fri., 5 p.m.
End of Second Week; last day for additions to programs of registered students ..... Sept. 3, Fri., 5 p.m.
Labor Day holiday ..... Sept. 6, Mon.
End of Fourth Week; last day for change in grading option ..... Spet. 17, Fri., 5 p.m.
End of Sixth Week; last day for withdrawal from courses without grade and without approval of college or school ..... Oct. 1, Fri., 5 p.m.
Homecoming holiday ..... Oct. 9, Sat.
Midsemester ..... Oct. 15, Fri.
Thanksgiving Recess begins Nov. 24, Wed., 10 p.m.
Classes resume ..... Nov. 29, Mon., 7:30 a.m.
*Closed Period ..... Dec. 6, Mon.-Dec. 18, Sat.
*Pre-examination Week Dec. 6, Mon.-Dec. 12, Sun.
*Semester Final Examinations Dec. 13, Mon.-Dec. 18, Sat
Semester ends; last day for removal of Incomplete grade (5 p.m., Fri.); Winter Recess begins Dec. 18, Sat. 10 p.m.

## 1983 Spring Semester 1983

Undergraduate Applications and Credentials should be in the Admissions Office not later than **January 1.**

Instruction begins; Late Registration
Fee applies. ..... Jan. 17, Mon.
Late Registration closes ..... Jan. 21, Fri., 5 p.m.
End of Second Week; last day for additions to programs of registered students .... Jan. 28, Fri., 5 p.m.
End of Fourth Week; last day for change of grading option ..... Feb. 11, Fri., 5 p.m.
End of Sixth Week; last day for withdrawal from courses without grade and without approval of college or school ..... Feb. 25, Fri., 5 p.m.
Midsemester ..... Mar. 11, Fri.
Spring Recess Begins ..... Mar. 12, Sat., 10 p.m.
Classes resume ..... Mar. 21, Mon., 7:30 a.m.
Honors Assembly ..... To be arranged
*Closed Period ..... May 2, Mon.-May 14, Sat.
*Pre-examination Week ... May 2, Mon.-May 8, Sun.
*Semester Final Examinations May 9, Mon.-May 15, Sat.
Semester ends; last day for removal of Incomplete grade (5 p.m., Fri.); Summer
Recess begins ..... May 14, Sat., 10 p.m.
Commencement ..... May 15, Sun., 7:30 p.m.

# THE REGENTS OF THE UNIVERSITY

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# GENERAL INFORMATION

## About This Bulletin

THE CATALOG is the student's guide to the program and regulations of the University. The student is expected to familiarize himself with University regulations and to assume his/her proper responsibility in connection with them.

The University of New Mexico Bulletin is intended to provide a summary of the undergraduate programs, courses of instruction, and academic regulations of the University, as well as a guide to policies and services affecting undergraduate students.

The first section of this Bulletin describes the physical and academic environment at the University. This includes a directory of University offices, the academic calendar, administrative offices of the University, and general information about the University—its past, its present programs and services, and its goals. Also included in the front section are University policies regarding admission and registration, academic rights and responsibilities of students, expenses, housing, financial aid, where to go for information about student services, and academic regulations.

The second section of the Bulletin provides detailed information about the admissions policies, degree requirements, programs, and curricula of the schools and colleges of the University. Following this is a listing of the courses offered at the University, arranged alphabetically by department. At the beginning of this listing is a guide to the symbols used in describing courses.

While providing information to students about the curricula and policies of the University of New Mexico, the provisions of this Bulletin are not intended to be regarded as a contract between the student and the University, and the University reserves the right to withdraw or change any provisions or requirements at any time within the student's term of residence.

For information about University programs and policies not included in this Bulletin, please contact individual departments or administrative offices.

## Goals of The University

The University of New Mexico has as its primary responsibility the task of serving the citizens of the State of New Mexico by offering the opportunity of a well-rounded education at the higher level. The ultimate goal of college or university education is to equip the maximum number of citizens with the understanding and wisdom which will aid them in becoming useful and responsible members of a democratic society. The University also recognizes its duty to supply other services which foster the culture and welfare of the people.

**General Education**

*Personal Development.* There are skills, intellectual abilities, and standards of behavior which are esssential to the educational and moral progress of every individual. Therefore, the University recognizes its responsibility to help each student toward the highest possible personal development through the attainment and maintenance of skills of communication, skills of reasoning and critical thinking, good habits of study and of independent investigation, and sound standards of behavior in matters of health and social responsibility.

*Liberal Education.* The University proposes also to bring the students to an awareness of current problems and a desire to aid in their solution, and, above all, to give him the enlarged perspective that comes through an understanding of the social, scientific, artistic, literary, religious, and philosophical traditions—the cultural heritage of mankind.

**Special and Professional Education**

It is a further purpose of the University to provide opportunities for training in scholarly and technical fields. To serve the needs of the State and the welfare of its people, the University offers a variety of curricula for those students who desire and are able of professional attainment. Training in the professions is intended to supplement the general education of the student and to equip him/her for a career.

**Scholarship and Research**

A prime responsibility of the University is to make its contributions to the total body of knowledge through original investigation. A special obligation to give due concern to the problems of the State and region is also recognized. To these ends the University encourages its students and faculty to engage in research, scholarship, and creative activity by providing suitable facilities in an atmosphere conducive to acheivement.

The findings of research are made available to the public through various bureaus, a program of publications, and technical advisory services.

**Adult Education and Cultural Programs**

In order to extend its services to those not regularly enrolled as full-time students, the University offers extension, independent study, and evening courses. In addition, by sponsoring exhibits, lectures, forums, and concerts on its campus and through the media of radio and television, the University seeks to make significant contributions to the cultural life of the State.

**Retention of Students**

Approximately two-thirds of a UNM beginning freshman class continues into a sophomore year, one-half into a junior year, and more than one-third into a senior year. Approximately one-third of the beginning freshman class eventually graduates, given a six- or seven-year period of time. Students transfering to UNM from other institutions likely have higher retention rates and do comprise one-half of our baccalaureate graduates.

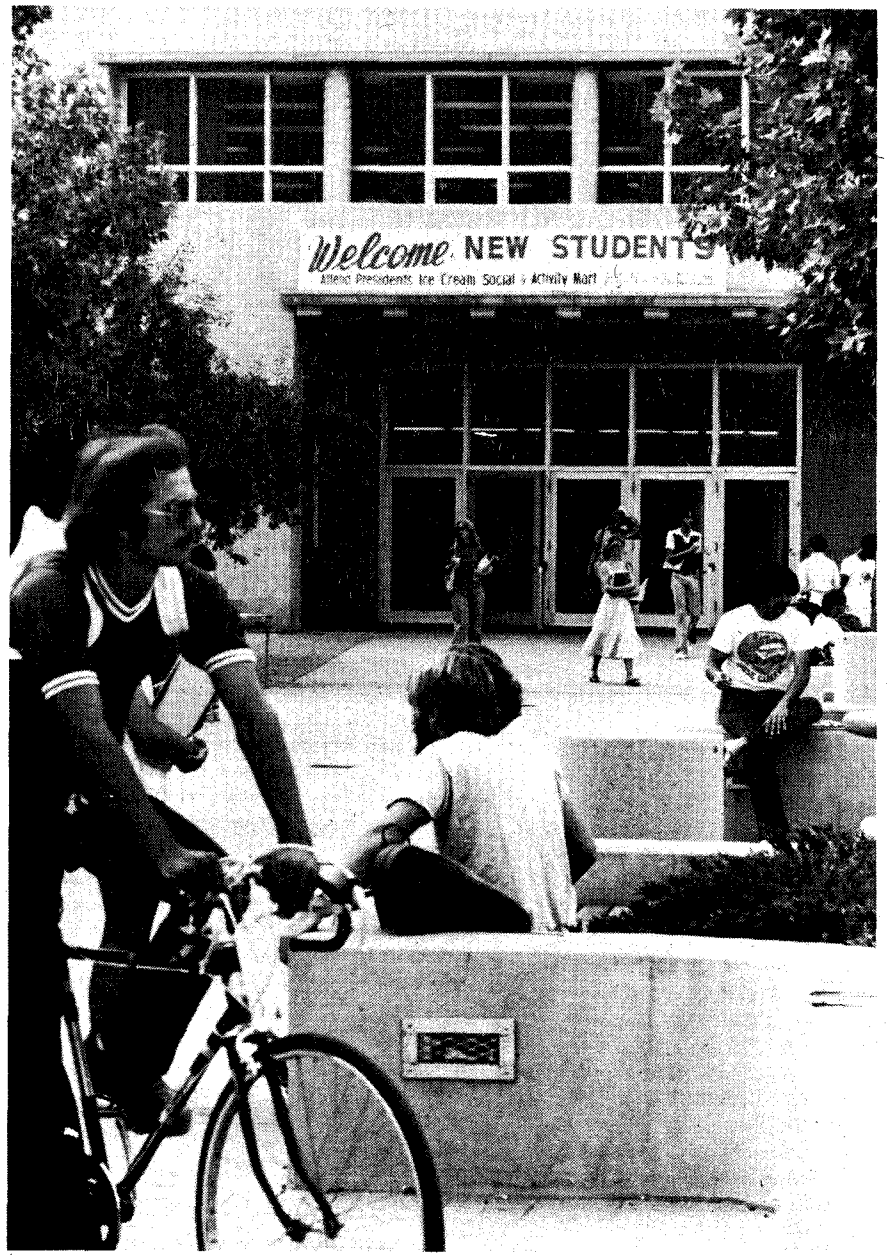
## Accreditation

North Central Association of Colleges and Secondary Schools, National University Extension Association, Association of American Universities, American Association of University Women, Engineers' Council for Professional Development, American Council on Pharmaceutical Education, American Association of Colleges of Pharmacy, American Bar Association, Association of American Law Schools, American Association of Colleges for Teacher Education, National Council for Accreditation of Teacher Education, National Association of Schools of Music, American Council on Education for Journalism, National League for Nursing, Association of American Medical Colleges, Liaison Committee of the Council on Medical Education of the American Medical Association, Association of American Medical Colleges, National Architectural Accrediting Board, American Boards of Examiners in Speech Pathology and Audiology, American Assembly of Collegiate Schools of Business.

## Historical Sketch

The University of New Mexico was born in 1889, 23 years before New Mexico was to become a state. Albuquerque at that time was a dusty little village on the banks of the Rio Grande, and in the entire Territory there was not a single public high school. Opposition to creating a university was intense; the Territory was poor, and many persons felt education was best left to the churches, whose responsibility it traditionally had been. But largely through the efforts and vision of a young Albuquerque lawyer, Bernard Shandon Rodey, the New Mexico legislature in the final days of its session authorized the creation of New Mexico's first institution of higher learning.

But authorizing a university was one thing; actually creating one was another. Twenty acres located on a mesa two miles east of Albuquerque were donated to the University, and on this isolated site was built a red-brick schoolhouse with sandstone trim. On June 15, 1892, 75 summer school students enrolled as the University's first class, but the University itself didn't open until September—as a "normal school, "intended to train teachers. The school also accepted preparatory students, because existing schools in the Territory were inadequate to prepare high school students for college. In 1894 the University bestowed upon members of its first graduating class the degree of bachelor of pedagogy.



ther firsts soon were to follow. In 1896 e first matriculation fee, $3, was charged, e money to go for library materials. In 98 the College Department became the ollege of Literature and Arts, later the ollege of Arts and Sciences, and the hool's first student organizations were rmed—the Ben Hur and Estrella literary cieties and the Camera Club. The first sue of the yearbook, the Mirage, peared in 1898. Also that year, the hool appointed its first physical director charge of gym and exercise."

1901, George William Tight became the niversity's third president. A man of exhaustible energy and a geyser-like agination, President Tight's eight-year dministration left an indelible impression the new institution. He personally anted trees, constructed buildings, dug a ell, built irrigation ditches, compiled the st UNM songbook, taught chemistry and ology, and cajoled and inspired his lleagues and students to join him in his forts.

t probably President Tight's greatest hievement was putting into practice his nviction that the University should reflect southwestern environment, and he set out creating a campus whose chitecture was inspired by that of the ueblo Indian peoples of the region. A new wer plant was the first pueblo-style ilding, following by new men's and omen's dormitories. The next project was e Estufa (still on the UNM campus), a plica of a kiva at Santo Domingo Pueblo. dgin Hall, the former red-brick hoolhouse, was remodeled into its esent pueblo style in 1909.

ther changes occurred during President ght's administration. The first fraternity—pha Alpha Alpha—was organized in 03, as was the first sorority, Sigma gma. In 1906 the Engineering School as created. In 1908 the Associated udent Body was organized, though the st student council didn't exist until 10 ars later.

1912 New Mexico became the 47th ate, and Dr. David Ross Boyd became e University's fifth president, a position was to hold until 1919. As president, Dr. oyd dedicated himself to expanding the niversity's acreage and physical plant d to publicizing and promoting the niversity. Within four years the enrollment creased from 78 students to 227. In 1915 e requirements for a master's degree first ere stated, and Pi Kappa Alpha and gma Chi became the first nationally filiated fraternities on campus. In 1916 a mmittee on graduate study was pointed, and the first honorary society—Kappa Phi—was organized. The next ar the first master's degrees were varded, in Latin and chemistry.

By the time World War I had ended, UNM had ceased to be merely an academy and had become a real university. In 1919 there were only 4 preparatory students out of an enrollment of 348. Also that year the University for the first time charged tuition—$5.

The University continued to grow in the 1920s. By 1925 enrollment had reached 610 students. In 1927 Dr. James Fulton Zimmerman became president of the University, and also that year the Regents formally adopted the pueblo-style for the University's architecture. In 1928 the College of Education was created, as was the Extension Division (although the University had been involved in extension work since 1913). Albuquerque's population then was 25,000.

The Great Depression of the 1930s did not halt the University's accelerating growth. In 1930 El Palacio Press of Santa Fe moved to the University, eventually becoming The University of New Mexico Press. In 1933 John Gaw Meem became the University's architect, and that same year the University received formal approval by the American Association of Universities.

General College, later University College, was created in 1935, followed in 1936 by the College of Fine Arts. Zimmerman Library, designed by Meem, opened in 1938. And when the decade ended in 1939, the University had 2,569 students enrolled.

World War II dominated national life in the early 1940s, and in 1944 Congress passed legislation that was to have a profound impact on all U.S. institutions of higher learning—the G.I. Bill. In a very few years, a college education became accessible to persons of all economic classes instead of just a wealthy elite.

Expansion of the University continued following the war. In 1947 the College of Business Administration and the College of Law were created. Also that year the first doctoral candidates received their degrees. In 1949 the Air Force ROTC program came to campus, joining the Naval ROTC program, which arrived in 1941. Other important changes were to take place in the 1950s and 1960s. Mitchell Hall was built in 1951, while 1955 saw the creation of the College of Nursing. Hokona Hall was completed in 1956. In 1960, continuing a long tradition of supporting the arts, UNM became the first university in the Rocky Mountains to offer a Ph.D. in art history.

The School of Medicine was created in 1961, although its first class, of 24 students, wasn't enrolled until 1964. In 1968 the University's Gallup Branch opened, as did the Andean Study and Research Center in Quito (Andean center was deactivated in 1980.), Peru. The University had long had a history of supporting programs dealing with Latin America, and the language and Area Center for Latin America had earlier been created in 1965. Dr. Ferrel Heady became president of the University in 1968.

The late 1960s and early 1970s were a time of sometimes violent protests against America's involvement in Vietnam, but throughout this period other important events occurred. In 1969 the Bachelor of University Studies degree was approved. In 1970 the University's three ethnic cultural centers—Afro-American, Chicano, and Native American—were created, and by the 1972-73 school year 1,200 Native Americans were enrolled at UNM, helping to make the University a national leader in minority student education.

In 1974 the Robert O. Anderson School of Business and Administrative Sciences was created. That also was the year that UNM alumna Francine Neff became Treasurer of the U.S.

In 1975 Dr. William E. "Bud "Davis succeeded Dr. Heady as president of the University, and two years later President Davis summarized some of the progress the University had made during its nearly 100 years of existence. During 1975-76 50,000 persons took advantage of courses made available through UNM. In 1976 more than 780,000 persons were spectators at UNM athletic events. That same year 2 million persons attended cultural events at the University's Popejoy Hall. By 1979 enrollment at the University, not counting its branches or extension programs, had reached nearly 23,000 students. Graduate student enrollment was 3,563, and 772 master's and 110 doctor's degrees were awarded. The University consisted of 13 schools and colleges, and it offered more than 4,000 courses in 98 fields of study through 58 instructional departments or divisions. Its campus in 1979 covered more than 600 acres and included 120 buildings. In 90 years, the University had come a long way since its inception as a red-brick schoolhouse on a lonely mesa.

## The Environment

Albuquerque, situated on the banks of the historic Rio Grande, is the home of The University of New Mexico. The city is bordered on the east by the majestic Sandia Mountains and on the west by a high volcanic mesa. With a population of nearly 400,000 persons, the city is the geographic and demographic center of the state.

The campus of The University of New Mexico lies a mile above sea level. Albuquerque receives abundant sunshine and annual rainfall of nine inches. While summers are warm, the city's high elevation and low humidity moderate the temperatures. Winter storms are brief, and

snow does not linger in the city, yet snow accumulations in the nearby Sandia Mountains make it possible to play tennis or golf on a winter morning and ski in the afternoon.

The distinctive architectural style of the campus, contemporary in treatment but strongly influenced by the Hispanic and pueblo Indian cultures, is characterized by vigas, patios, balconies, portals, and earth-colored, slightly inclined walls in the style of ancient adobe houses. Surrounded by giant cottonwoods, elms, and mountain evergreens, the campus embodies the lifestyle fostered by the mild, sunny, climate.

Albuquerque is one of the major cultural centers of the Southwest, offering museums, art galleries, theatre and musical groups, symphony orchestras, and shops displaying both traditional and contemporary arts and crafts. Native American ceremonial dances are held each year in nearby pueblos and often are open to the public.

University administrators for many years have realized that the location of The University of New Mexico provides it with a wealth of historical source material and that its proximity to the Native American, Hispanic, and Mexican cultures makes it a natural place for the study and appreciation of these cultures. The administrators, therefore, have encouraged the development of southwestern and Latin American programs and research. Some of the results of this emphasis have been the offering of a major in Latin American Studies, the annual field session in anthropology, and the creation of the Latin American Institute and the Latin American Programs in Education (LAPE), as well as the many paintings, carvings, and weavings found throughout the campus.

## Libraries

In the fall of 1980 The University of New Mexico libraries acquired their one-millionth volume, an important milestone for a library system that only 10 years ago had half that many items. Included among the materials received by the University libraries last year were approximately 10,000 current scholarly and general interest newspapers, journals, and magazines, with back copies of some 23,000 serial titles also available.

Located at the north end of Smith Plaza on the central campus is Zimmerman Library, the University's main library housed in a building frequently cited as the best example of the modified pueblo style of southwestern architecture unique to the University. In addition to its general research materials, Zimmerman Library is especially strong in its collections dealing with the Southwest. These include those in offices, the Anderson Room and the Coronado Room containing many valuable southwestern materials; the map room; the Bell Room containing rare books, maps, and photographs; and the Southwest Wing, containing materials dealing with the built environment of the Southwest. Zimmerman Library also has been designated a respository for U.S. Government publications. The Basic Skills Center is located in Zimmerman Library, as are offices and meeting rooms.

The Fine Arts Library is located in the Fine Arts Center and encompasses materials dealing with architecture, art, photography, drama, and music, including, in addition to books, large numbers of slides, tapes, and scores. Affiliated with the library is the John Donald Robb Archive of Southwestern Music, containing hundreds of hours of recordings of folk music from all the cultures of the Southwest.

The Tireman Learning Materials Library, located in the College of Education, contains a collection of book and non-book materials for classroom use, as well as the children's literature collection, the Anita Osuna Carr Bicultural Bilingual Collection, and a regional evaluation center of the newest textbooks to be considered for evaluation and adoption.

On the ground floor of the Robert O. Anderson Schools of Management is the William J. Parish Memorial Library, containing a working collection of materials pertaining to the study of business.

The Medical Center Library on the North Campus contains more than 80,000 volumes, two thousand periodicals, and 3,000 media center items. Borrowing privileges are available to North Campus students, faculty, and staff, as well as to central campus faculty and graduate students.

The Law Library in Bratton Hall on the North Campus contains more than 150,000 volumes and includes comprehensive collections of British, federal, and state court reports. Special collections are being developed in American Indian Law and in Land Grant Law. Persons not connected with the Law School may borrow library materials upon proper registration and with permission of the desk attendant.

## Museums

Museums, like classrooms, are an important part of the teaching-learning process, and UNM has on its campus museums housing significant anthropological, art, biological, and geological collections.

The Maxwell Museum of Anthropology, located at the south end of the Anthropology Building, houses both permanent and temporary exhibits illustrating the story of human development, with special emphasis on southwestern anthropology and archaeology. The Maxwell Museum is ope to the public, as well as to students and faculty members, on a daily basis.

The University Art Museum, located in the Fine Arts Center, houses the University's permanent collection of art works and is the scene of several noteworthy special exhibitions each year. The museum also exhibits the work of faculty members and students of the Department of Art. It is open to the public on a regular basis.

Jonson Gallery at 1909 Las Lomas NE features monthly one-person or group shows by New Mexico artists, with emphasis on contemporary painting. The gallery is open to the public daily, except Mondays, from noon to 6:00 p.m.

In addition to these art museums on campus, UNM also maintains in Taos the Harwood Foundation, which serves as a museum, library, and community center. The foundation has an excellent collectio of paintings by artists who have lived anc worked in New Mexico.

The most important single collection of New Mexico vertebrates and plants is contained in the Museum of Southweste Biology, maintained by the Department of Biology. This museum contains the J. Stokely Ligon bird collection and the George B. Wilmott collection of amphibians. Housed in the Biology Building, this museum is primarily a research museum, and its use is limited t University faculty members and students and to other serious students of southwestern field biology.

Minerals, rocks, fossils, and map displays are among the exhibits featured in the Geology Museum, located in the Geology Building. The museum is the site of a visual seismic recorder connected to a seismograph at the U.S. Coast and Geodetic Survey's Albuquerque Seismic Center in the Manzano Mountains southeast of Albuquerque. The Albuquerque Gem and Mineral Club also maintains at the museum rotating exhibits of specimens, including gems and precio stones. The Geology Museum is open to the public.

The Institute of Meteoritics is a division o the Department of Geology and maintain on display a large collection of meteorites including the world's largest stone meteorite, recovered in Nebraska in 194 This museum is open to the public.

## Popejoy Hall/Fine Arts Center

UNM's Popejoy Hall/Fine Arts Center is one of the Southwest's major cultural anc entertainment facilities. Built in 1966, Popejoy Hall includes a modern 2,094-se theatre, a large stage, dressing rooms, lobbies and lounges, meeting rooms, anc

The Fine Arts Center complex also contains Rodey Theatre, the Experimental Theatre, Keller Recital Hall, the Fine Arts Library, and the Fine Arts Museum.

As many as 170 professional and local performances are made available in Popejoy Hall each year. These include performances presented by the Cultural Entertainment Series, the University Music Department, the New Mexico Symphony, the Civic Light Opera, the Classics Theatre Company, the Children's Theatre, the Opera Theatre, the Youth Symphonies, the Kiwanis Travel Film Series, and many other groups.

Special University student discounts are offered for all events in Popejoy Hall upon presentation of a current University ID card. Schedules of upcoming performances may be obtained from the box office or from listings in the New Mexico Daily Lobo.

## Ethnic, Minority Programs

To provide equal educational opportunity for persons from all cultures and to preserve and study the cultural diversity of the state, The University of New Mexico has fostered the creation of numerous special programs.

Afro-American, Chicano, and Native American cultural centers on the University's main campus offer courses and seminars in the history and development of these cultures. In addition, these centers provide counseling and other services for the University's minority students and members of the community. The Office of Student Financial Aid and Career Services administers special financial aid and scholarship programs intended to ensure that higher education is accessible to low-income students from all cultures.

Also on campus are numerous other programs to promote equal opportunity among New Mexico's minority students. These include: the All Indian Pueblo Council Teacher Education Program; the American Indian Bilingual Education Center; the American Indian Law Center; Chicano Student Services; the Cultural Awareness Bilingual Assistance Center; special engineering programs for Hispanics, Native Americans, and women; the Multicultural Education Center; and the Navajo Teacher Education Development Project.

# ADMISSION AND REGISTRATION

THE ADMISSION OFFICE is located in Scholes Hall. Robert M. Weaver is Dean of Admission and Records. All correspondence and inquiries about undergraduate admissions should be addressed to: The Office of Admissions, The University of New Mexico, Albuquerque, N.M. 87131, Tel. (505) 277-2446.

## Nondiscrimination Policy

All applications are considered equally, regardless of sex, race, color, national origins, marital status, age, beliefs, or handicap.

## When to Apply

We strongly encourage you to apply as early as possible. The dates by which the Admissions Office should have all your application materials are:
—August 1 for the fall semester;
—January 1 for the spring semester;
—June 1 for summer session.

Students are accepted for admission to the undergraduate colleges of the University for the fall, spring, and summer sessions. Some colleges and schools with limited enrollments have deadlines and requirements differing from those above; these include the School of Architecture and Planning, the School of Law, the School of Medicine, and the College of Nursing. Applicants for these programs should see the appropriate sections of this catalog for specific deadlines and requirements.

## American College Tests (ACT)

ACT results must be filed by freshman applicants, including transfers with fewer than 26 semester hours of transferable credit. Although students may be notified of admissiblity on the the basis of Scholastic Aptitude Test (SAT) scores, the ACT is still required for advisement and placement purposes. The University recommends that the ACT be taken on a summer or fall testing date following the junior year in high school. It is the student's responsibility to arrange for scores to be sent to the Admissions Office directly from ACT Records, P.O. Box 451, Iowa City, Iowa 52240; scores on transcripts or student copies do not satisfy University requirements, and applications from freshmen will not be processed until official ACT scores are on file.

## Beginning Freshmen

**Requirements for Admission.** The student must be a graduate of a high school accredited by a regional accrediting association or by the state department of education or state university of the state in which the high school is located. Graduates of unaccredited high schools who meet all other admission requirements except high school accreditation may validate the unaccredited work by earning qualifying scores on the American College Test (see also *Admission by Examination).*

The minimum qualitative requirement for admission is a grade average of C (2.0 on a 4.0 scale) in previous academic work.

As evidence of adequate preparation for successful college work, the transcripts of freshman applicants who graduated after February 1977 must include at least 13 units in specified subject matter areas. Of these 13 units, 9 units must be distributed as follows:

English—3 units
Social Studies—2 units (including 1 unit in U.S. history)
Natural Sciences—2 units, 1 unit of which must be in biology, chemistry, or physics
Mathematics—2 units (algebra, geometry, trigonometry, or higher mathematics). The minimum 2-unit requirement may be satisfied with Algebra I and Algebra II or with Algebra I and geometry. A student intending to study mathematics, physics, engineering, or architecture will find it necessary, to complete the required curriculum without loss of time, to have completed at least 2 units of algebra, 1 unit of geometry, and 1/2 unit of trigonometry or higher mathematics. Students planning to enter pharmacy, psychology, economics, political science, sociology, or business administration should include in their preparation at least 2 units of algebra and 1 unit of geometry. The remaining 4 units of the specified 13 must be chosen from the following list of restricted electives:
Group A—English, journalism, speech
Group B—French, Spanish, Latin, German, and other foreign languages
Group C—algebra, plane geometry, solid geometry, trigonometry, or higher mathematics
Group D—general science, biology, chemistry, physics, physiology, geology
Group E—history, geography, sociology, economics, government, psychology, social science
Group F—fine arts (music, art, drama)

**Deficiencies.** Deficiency in one or more of the four specified subject matter areas (English, mathematics, social science, and natural science) may be removed by taking the course or courses in the areas of deficiency through: a) enrollment in high school (day or night division) or enrollment in a technical-vocational school; b) enrollment in the appropriate non-credit

course or courses in The University of New Mexico Continuing Education Division; c) completion of an appropriate course or courses in independent studies (correspondence) work at The University of New Mexico or another accredited institution of higher learning; d) attainment of an ACT score of 20 or higher in the area or areas of deficiency; or e) attainment of a composite ACT score of 22 or higher.

Students who are deficient in no more than two required high school courses but who meet all other admission requirements may be admitted provisionally to the University. These students are required to have an interview in the Admissions Office prior to enrollment.

In no case will courses completed to remove subject matter deficiencies be counted toward fulfillment of requirements for a baccalaureate degree.

**Special Admissions.** Upon review and approval by the Committee on Admissions and Registration, a limited number of students may be admitted to the University each year without regard to the specific subject matter requirements set forth above.

***The foregoing information describes current admission requirements. It is anticipated that possibly as early as 1984 there will be significant changes including the new requirements of 2 units of a language other than English and one additional unit in English (composition) and one additional college preparatory mathematics.***

**Recommended Units of High School Courses for Certain Majors**

To save time in meeting curricula requirements in the majors listed below, students should try to have completed as many of the recommended high school courses as possible:

*Engineering or Architecture.* 2 years of algebra, 1 year of plane geometry, and 1/2 year of trigonometry or college preparatory mathematics.

*Mathematics and Statistics.* 2 years of algebra and 1 year of geometry. More advanced courses, particularly trigonometry, are desirable for students planning to take calculus.

*Pharmacy.* 1 year of chemistry, 1 year of biology, 1 year of physics, at least 2 years of algebra and 1 year of geometry and trigonometry, 4 years of English, and 1 year of social sciences and/or humanities.

*Nursing.* 2 years of college preparatory mathematics (algebra and geometry) and at least 2 years of laboratory science (biology, chemistry, or physics).

*Dental Hygiene.* 2 years of high school science, preferably biology or chemistry, and a well-rounded variety of subject areas.

*Pre-Medicine, Pre-Dentistry, Sciences, Business, and Administrative Sciences.* Intermediate algebra and plane geometry.

*Latin American Studies.* 2 years of high school Spanish.

*Professional Physical Education.* College preparatory algebra, biology, chemistry, and physics.

## University Skills courses.

Entering freshmen whose ACT scores indicate possible problems with university-level work or entering freshmen with deficiencies in admissions requirements may be required to take up to 12-14 credit hours in University skills courses during their first semester. College advisers will help these students determine in which courses they should enroll. General University credit will be granted for University skills courses, but the individual colleges and degree-granting programs will determine the number of these credits applicable toward graduation.

## How To Apply

**Act Application.** This procedure is recommended because it eliminates several repetitious steps for the applicant. It can be used if the applicant 1) will graduate from an accredited high school, 2) takes the ACT on one of the national test dates as a senior in high school, and 3) in taking the ACT request scores to be sent to The University of New Mexico.

The Admissions Office, when it has received the ACT scores, will send the applicant a specially prepared application for admission. The application must be signed and returned to the UNM Admissions Office along with a $15.00 nonrefundable application fee. The applicant arranges to have a high school transcript sent to the Admissions Office at the end of the first semester of the senior year.

**Regular Admission.** Students who prefer to use the traditional application procedure may submit an application for admission and the $15.00 nonrefundable application fee and arrange for official ACT scores and high school transcripts to be sent to the Office of Admissions.

When these items have been received, the Office of Admissions will send the applicant notice of acceptance or denial.

Students applying early in their senior year will be issued a notice of eligibility as soon as processing is completed. This preliminary notice is firm for the students's planning purposes, subject only to completion of high school. Registration material is mailed following final notice of admission.

Students are urged to apply well in advance of the semester for which they plan to enroll. High school students should apply early in their senior year. Early application is particularly important for financial aid applicants.

**University College.** All freshmen are enrolled in University College when they enter the University. When they have completed satisfactorily a minimum of 26 semester hours and have met prerequisites of the college they wish to enter, they may transfer to one of the degree-granting programs of the University, including the Bachelor of University Studies program. (See also *University College.)*

**Early Admission.** The University may admit a limited number of highly qualified applicants after they've completed their junior year of high school. To be considered for early admission, the student must: 1) have achieved an exceptional record on a minimum of 15 units, including the University's subject matter requirements, in an accredited high school; 2) have the unqualified recommendation of the principal or headmaster; and 3) have achieved a score on the ACT satisfactory to the University. In most cases a personal interview with the Director of Admissions is required before a decision is made.

## Admission by Examination

An applicant 18 years or older who has not graduated from high school may be admitted on the basis of a standard score average of 50 or above on the high school level General Educational Development (GED) tests or standard scores averaging 22 or above on the ACT. Students admitted on GED scores must also present ACT scores and high school transcripts or other credentials verifying that the student has completed the University's high school level subject matter requirements, either with work in high school or by one of the methods for removal of deficiencies (see *Requirements for Admission)*

## Associate Degree Programs

Although associate degree programs may have special admission requirements, applicants for these programs, except those at the Gallup branch, must first meet the general admissions requirements of the University. Associate degree students also are subject to the same requirements regarding initial course placement and removal of deficiencies as are baccalaureate degree students. (See sections on *ACT* and *Requirements for Admission.)*

## CEEB Advanced Placement Program

The University participates in the Advanced Placement Program of the College Entrance Examination Board (CEEB). By department, placement and credit is awarded as follows:

*Art History.* Credit granted for scores of 4 and 5. A score of 3 may be acceptable upon review by departmental faculty.

*Biology.* Credit to a maximum of 8 semester hours is granted for scores of 5 and may be allowed for scores of 4 upon review by the departmental faculty. A maximum of 4 semester hours may be allowed for grades of 3 upon departmental review. Course equivalencies are determined by the biology department.

*Chemistry.* Credit for Chemistry 121L and 122L granted for a scores of 3. Credit for 131L and 132L granted only for scores of 4 and 5.

*Classics.* Credit granted for scores of 4 and 5. A score of 3 may be acceptable upon review by departmental faculty.

*English.* Credit granted for scores of 3 or better.

*History.* Credit granted for scores of 4 and 5. A score of 3 may be acceptable upon review by departmental faculty.

*Mathematics.* Credit for Math 162 granted for scores of 3 or better in Calculus AB. Credit for Math 162 and 163 granted for scores of 3 or better in Calculus BC.

*Modern Languages.* Credit granted for scores of 4 and 5. A score of 3 may be acceptable upon review by departmental faculty.

*Music.* Credit granted for scores of 4 and 5. A score of 3 may be acceptable upon review by departmental faculty.

*Physics.* Credit granted for score of 3 or better upon review by departmental faculty and a personal interview.

## UNM College Credit for ACT or CLEP General Scores

**ACT Credit.** For eligible beginning or transferring freshmen who graduated from high school after February 1979, the University will grant up to 30 semester hours credit for qualifying ACT standard scores earned prior to the student's first enrollment in any college or university. (An exception will be made for students who earned college credit while in high school.) Students who graduated earlier than February 1979 and who have not earned college credit at UNM or any other college or university may petition for an exception.

Credit as shown below will be granted in each area in which the indicated minimum standard score is earned:

| AREA | SCORE | SEM. HR. CR. |
|---|---|---|
| English | 25 | 3(equiv. Engl 101°) |
| English | 27 | 6(incl. 3 for Engl 101°) |
| Mathematics | 29 | 6 |
| Social Science | 30 | 6 |
| Natural Science | 32 | 6 |
| Humanities (combined English and social sciences) | 58 | 6 |

Following their admission, UNM freshmen eligible for ACT credit will be sent confirmation of the credit that will be placed on their permanent record during their first semester.

**CLEP GENERAL CREDIT.** The University grants credit for qualifying scores on the College Level Examination Program (CLEP) provided the student takes the examination prior to earning 26 semester hours of acceptable college credit. Six semester hours are allowed for each of the CLEP general examinations on which a grade of 500 or better is earned except English which requires a score of 610. Students interested in taking the CLEP General Examinations are urged to do so before entering the University. In any event, the tests must be taken before 26 semester hours of credit are earned at any college or university, including UNM.

**ACT/CLEP General Credit Policies.** Policies vary for application of ACT or CLEP General credit toward a degree in the individual colleges of the University. In the Colleges of Arts and Sciences, Education, Fine Arts, and in the Bachelor of University Studies program, the full 30 hours may be applied toward a degree. The College of Arts and Sciences accepts the hours only as elective hours toward the total of 128 required for graduation. The College of Education accepts the hours as elective credit; credit toward general education requirements is subject to approval of the department. The College of Fine Arts applies the credit toward Arts and Sciences requirement or for additional hours outside the major requirements. The Bachelor of University Studies Program accepts the full 30 hours toward the 128 required for graduation. In the other colleges of the University, the number of hours earned through ACT or CLEP General that may be applied toward a degree may be considerably reduced; degree programs in these colleges are quite structured, with a limited allowance for electives. In all cases, students should work closely with their degree college and major department offices. All students eligible for the full 30 semester hours of credit will be classified as sophomores during their first semester of enrollment in UNM.

**CLEP Subject Examinations.** In addition to the CLEP General Examinations described above, The University of New Mexico also grants credit for CLEP Subject Examinations as administered by the College Entrance Examination Board. Other than for Introduction to Business Law and those courses for which credit in English is granted, UNM credit is granted to newly admitted and regularly enrolled students who achieve scores of 45 or better on the CLEP Subject Examinations listed below, as approved by the appropriate UNM academic department. (Credit is not granted for subject examinations not listed below.)

| CLEP Subject Exam | Equivalent UNM Course | Credit Granted (semester hours) |
|---|---|---|
| Biology | Biol 110-111 | 6 |
| Intro to Bus Law (min. score of 60 required) | MGT 310 or 359 | 3 |
| General Chemistry | Chem 121L-122L | 8 |
| Intro Micro-Macroeconomics | Econ 200-201 | 6 |
| Intro Macroeconomics | Econ 200 | 3 |
| Intro Microeconomics | Econ 201 | 3 |
| Money and Banking | Econ 315 | 3 |
| College Composition (min. score of 55 required) | Engl 101 | 3 |
| Anal. and Interpret. of Lit. (min. score of 55 required) | Engl 102 | 3 |
| American Literature | Engl 280 | 3 |
| English Literature (min. score of 55 required) | Engl 280 | 3 |
| Afro-American History | Hist 284 | 3 |
| Western Civilization | Hist 101-102 | 6 |
| American Government | Pol Sci 200 | 3 |
| General Psychology | Psych 107 | 3 |
| Test and Measurements | Psych 410 | 3 |
| Human Growth and Development | Psych 220 | 3 |
| Educational Psychology | Psych 210 | 3 |

UNM requires original transcripts of test results sent from CLEP, Box 1821, Princeton, N.J. 08450. Credit for these examinations appearing on transcripts from other colleges will not suffice.

## Transferring Students

**Admission Procedure.** For new UNM students who have attended other colleges, the UNM Office of Admissions requires:

—A completed application and a $15 nonrefundable application fee.

—Official transcript from each college attended. A summary on one transcript of work at several colleges is not sufficient. If the student is applying for the next academic session at UNM while still enrolled at another institution, the official transcript must include a listing of courses in progress, as well as all completed work (See *Note* below.)

If the applicant is transferring to UNM with fewer than 26 semester hours of acceptable college work, the applicant is considered a freshman transfer and the following materials also must be submitted to the Office of Admissions:

—Official scores on the American College Test (ACT) sent directly from ACT Records, P.O. Box 451, Iowa City, Iowa. 52240.

—A complete official transcript of high school work.

Freshman transfers are required to meet high school level subject matter requirements (see *Requirements for Admission).*

Applications will not be processed until all the above required items are on file with the Admissions Office.

° Effective for freshmen admitted 1981 Fall.

* Both objective and essay portions of examinations must be completed. The essay is graded by UNM and credit is subject to departmental approval.

o allow students at other institutions to ıake definite plans for transfer, a etermination of admission status may be ıade before courses in progress are ompleted, subject only to receipt of the nal transcript. Students permitted to egister prior to receipt of their final anscripts may be disenrolled if their anscripts do not reach the Admissions )ffice within three weeks after the eginning of classes.

*lote:* The student must indicate on the pplication all previous college attendance. ıpplicants may not ignore previous college ttendance, even though they may prefer ɔ repeat all previous courses. Students ɔund guilty of nondisclosure or ıisrepresentation in filling out admission pplication forms, or who find after dmission or enrollment that for academic ır other reasons they are ineligible to eturn to their last institution but fail to eport this immediately to the Admissions )ffice, are subject to disciplinary action, ıcluding possible dismissal from the Jniversity.

**Vhen to Apply.** The Admissions ıpplication, required transcripts, and ACT esults (when applicable) should be on file ı the Admissions Office not more than 6 ıonths and not less than 30 days prior to he session for which application is made.

**Jniversity College.** All students who ıave completed fewer than 26 semester ıours of acceptable college credit will be equired to enroll in the University College. See the *University College* section of this :atalog.)

\dmissible students with more than 26 but ewer than 64 semester hours of ıcceptable college credit may be required ɔ enroll in the University College until they neet the special requirements for transfer ɔ the UNM degree-granting college of heir choice. (See appropriate sections of his catalog for these requirements.)

The University College will not accept ıtudents who have attempted 72 or more ıcademic semester hours or who have :arned 64 or more academic semester ıours.

**Grades and Suspension.** The minimum ıualitative requirement for University ıdmission is a grade average of C in all ɔrevious college work attempted. Individual ɔolleges may require a higher average for ıcceptance of transfers (see appropriate ɜections of this catalog for these equirements).

\ student under academic suspension rom another college or university may not ɜnter The University of New Mexico during he term of suspension. Upon termination ɔf the suspension period, the student is ɜligible to request consideration by UNM.

n general, students under disciplinary ɜuspension are not admitted to The Jniversity of New Mexico, but since the causes for disciplinary suspension vary from institution to institution, a student may be suspended from one school for reasons that would not be actionable at another. Therefore, UNM reviews individually admissions applications from students under disciplinary suspension from other institutions and, when justified, makes exceptions.

**Transfer of Credit.** A student transferring to UNM ordinarily will be given full credit for course work completed with a grade of C or better at a fully accredited instituion, if the courses taken are the same or equivalent to courses in the UNM college in which the student is enrolling.

Applicants from recognized collegiate institutions not fully accredited must have the equivalent of a 2.5 UNM index to be eligible for admission by transfer. Credit earned in such institutions usually is accepted on the same basis as by the state university of the state in which the institution is situated. When acceptance of credit on a validation basis is indicated, the student will be required to validate such credit by at least a 2.0 index on his or her first 30 semester hours of residence study at UNM. Where it seems proper, examinations for the validation of credit may be required.

Independent study or extension credit from institutions not accredited by regional accrediting associations is not accepted for transfer. A student who has completed such correspondence or extension work in a course comparable to one offered by UNM has the privilege of establishing credit here by examination (see *Examination to Establish or Validate Credit* below).

Only credit earned in nontechnical subjects is initially accepted from technical institutes which are accredited by a regional collegiate accrediting association. No credit is normally accepted by this University from technical institutes, business schools, or other post high school institutes which are not members of regional collegiate accrediting associations. However, students applying to or currently enrolled in the University who have earned technical credit which they believe would be applicable to the associate or baccalaureate degree they are pursuing may have an official transcript sent from the school directly to The University of New Mexico, Office of Admissions and Records. It will then be the student's responsibility to request referral of his credentials by the Admissions Office to the division of the University having supervision of his particular program. The division will determine whether any of the credit is acceptable in its program and return the transcript with its recommendations to the Office of Admissions. An interview or demonstration of competence or both may be required before the decision regarding credit is made. Acceptance of such credit would be binding only to the specific program recommending credit. It would be subject to reevaluation should the student later enter another program offered by the University.

Credits transferred from an accredited junior college will be accepted up to a maximum determined by the UNM college in which the student enrolls. No junior college course credits will be considered as above a sophomore level.

Course credits in religion may be allowed if the content can be considered literary, philosophical, or historical.

Only a tentative evaluation of transferred credit will be completed as soon as possible after the admission status has been determined. In some instances it will not be prepared until after notification of admission has been issued. If the student receives an evaluation prior to registration, it should be retained for advisement purposes.

*Unclassified Students.* Students transferring from unaccredited or partially accredited institutions are unclassified until they have validated credit in accordance with University regulations. This designation also is used temporarily when the evaluation of work from accredited institutions has not been made and definite classification therefore cannot be determined.

*Concurrent Enrollments.* In order to enroll concurrently in residence or by extension or correspondence in another collegiate institution, a student enrolled in UNM must have prior written approval from the dean of his or her college.

## Readmitted Students

A UNM degree student who stops attending for one or more regular semesters must file an application for readmission, although the application fee is not required. Also, students applying for readmission must meet the regular application deadlines.

A degree student who has attended another institution while away from UNM or has taken college-level correspondence or extension courses, must arrange for receipt by the Admissions Office of official transcripts of such credit. This transcript should also list courses in progress if the student is taking non-UNM courses at the time of application. Although this transcript would not show final grades, the UNM Admissions Office will let the students know their admission status so plans can be made, subject only to the final transcript being received by the Admissions Office not later than three weeks after classes begin.

Although credit earned during suspension from UNM will not be accepted for transfer,

attendance at another institution during suspension must be indicated on the student's application for readmission, and an official transcript must be furnished.

**University College**

All readmitted students who have completed fewer than 26 semester hours of acceptable college credit will be required to enroll in the University College. (See the *University College* section of this catalog.)

Admissible students with more than 26 but fewer than 64 semester hours of acceptable college credit may be required to enroll in the University College until they meet the special requirements for transfer to one of UNM's degree-granting colleges (see appropriate sections of this catalog for these requirements).

The University College will not accept students who have attempted 72 or more academic semester hours, including hours with grades of incomplete, or who have earned 64 or more academic semester hours.

## Non-Degree Students

Non-degree status is for applicants who wish to enroll for undergraduate University courses without entering regular status in one of the undergraduate colleges. Non-degree status is recommended for visiting students from other institutions. A student desiring non-degree status must file an admission application with the UNM Admissions Office.

To be a non-degree student in undergraduate courses at UNM, the applicant must meet one of the following requirements: 1) be at least 21 years old, or 2) have graduated from an accredited high school or its equivalent and been out of high school at least one year.

The following students are not eligible for non-degree status:

1. A student who is under disciplinary or academic suspension from UNM or any other collegiate institution.
2. A student who has exhausted his or her eligibility in the University College and who is not academically eligible to enter a degree-granting college at UNM.
3. Veterans planning to attend the University under one of the public laws governing veterans' educational benefits.
4. A former student previously enrolled in regular status in an undergraduate college at UNM.
5. A student from another country who is in the United States on a student visa.
6. A student who has been refused admission to regular status.

Students applying for non-degree status do not need previous academic records, but if they are planning to enroll in advanced courses with prerequisites, they should bring to registration evidence that the prerequisites have been fulfilled.

Applicants for non-degree status are required to certify that they are not under suspension from any college or university. Students found guilty of nondisclosure or misrepresentation in filling out the admission application form, or who find after admission or enrollment at UNM that they are ineligible for academic or other reasons to return to the last institution attended and who fail to report this immediately to the Admissions Office, will be subject to disciplinary action, including possible dismissal from the University.

A non-degree student is subject to all University regulations governing registration, attendance, and academic standing. Credit earned in non-degree status is recorded on the student's permanent record and may be applied in an undergraduate program when the student has satisfactorily established degree status by meeting UNM's entrance requirements and those of the student's degree-granting college. Non-degree students applying for regular status must follow admission procedures and provide all items required of transfer students (see *Transferring Students).*

**Non-Degree Status Limitations.**

Students may earn no more than 30 semester credit hours in non-degree status except for those who have previously completed a baccalaureate degree. No undergraduate college of the University will accept in a degree program more than 30 semester hours earned while the student is in non-degree status, nor is a college obligated to accept any hours earned in non-degree status that do not fulfill college degree requirements. If regular status is not attained prior to earning 30 semester hours, the student will be allowed to register in courses as an auditor only, receiving no credit.

Normally a non-degree student may not enroll for more than 7 semester hours during a regular session. ***This limitation does not apply to a student who has earned a baccalaureate or higher degree nor to a visiting student.***

Students who do not have a degree and who wish to enroll full time may not remain in non-degree status more than one semester. During that semester they must qualify for transfer to regular status. The senior residence requirement cannot be met by enrolling in non-degree status. This can be accomplished only by enrolling in a degree-granting college of the University.

A non-degree student who does not have a bachelor's or equivalent degree may not enroll in 500-600 level courses. Non-degree students normally may enroll only in undergraduate credit offerings. A maximum of 6 hours of graduate credit may be granted for non-degree work, but ONLY 1) if the student later is admitted to a graduate school, and 2) if the student's petition for such credit is approved by his or her major department and the Office c Graduate Studies.

**Credits for Teacher Certification**

A non-degree student desiring to take education courses leading to teacher certification must successfully complete the College of Education screening examination. A student who has an earne degree may take such education courses during the first semester of enrollment provided he or she completes screening concurrently. A student without an earnec degree is not eligible to enroll in most education courses until screening is completed. All non-degree students planning to take education courses shoul consult the Office of the Dean, College o Education, before enrollment.

## National Student Exchange

The University of New Mexico is a membe of the National Student Exchange (NSE) and welcomes to this campus the state college and university students who qualif for participation in the program. NSE give students an opportunity to study at an educational institution in a new setting ar to become better acquainted with the varied social, educational, and cultural patterns in the different geographical area of the United States. It also allows studen to take advantage of specialized courses or unique programs perhaps not availabl on the home campus.

Participation in the program is limited to one year. Under it New Mexico residents pay resident tuition while attending one c the 45 participating state colleges or universities throughout the nation. An applicant must be a full-time student, a sophomore or junior at the time of exchange, and have a minimum grade-point average of 2.5. Details and applications are available in the Office of Admissions and Records.

## International Students

The University admits a limited number c well qualified students who are citizens c other countries. For visa purposes these students are required to enter in regular status. Therefore, the Admissions Office requires, in addition to the admission application, the following materials:

—American College Tests (ACT) scores, applicable (see *American College Tests)*

—Official certified transcripts from each secondary school attended.

—Official certifications of any state or national examinations taken.

—Evidence of satisfactory results on the Testing of English as a Foreign Languag (TOEFL) examination in areas where the examination is administered. In other area the student may arrange to take the American Language Georgetown University Test (ALIGU) given by contacting the nearest U.S. Consulate Office.

—A certified bank statement showing ability to meet financial responsibilities while in the United States.

To facilitate the admission procedure, the applicant should gather all credentials and send them in the same mail to the Office of Admissions and Records. TOEFL and ACT results are sent directly to the University by the testing offices. Applications for graduate-level students (beyond the Bachelor's degree) and all the credentials listed above (except secondary school credentials) should be mailed to the Office of Graduate Studies.

Students transferring from within the United States must have completed a minimum of 26 transferable semester hours with a grade point average of 2.5 before being considered for admission.

All credentials must be submitted by May 1 for the fall semester or by October 1 for the spring semester. The deadline may be earlier depending upon the department.

## Veterans

The Veterans Readjustment Benefits Act of 1966, amended, provides university-level educational benefits for veterans and current servicemen whose active duty totals more than 180 days, any part of which occurred after January 31, 1955. These benefits are allowed for veterans and servicemen who 1) were released under conditions other than dishonorable, 2) were discharged for a service-connected disability, or 3) continue on active duty.

In seeking admission to UNM, the veteran student should follow the same application procedures as non-veterans. To certify eligibility for educational benefits under one of the public laws regarding veterans, the student may make application for V.A. benefits through the Veterans Affairs Office in Mesa Vista Hall, Room 2122. This also is the office to obtain special veterans' services at UNM and to certify UNM enrollment, a step required each term to initiate veterans benefits.

**Military Credits.** Credit for service training and experience is granted on the basis of measured educational achievement, in conformity with the procedures recommended by the North Central Association of Colleges and Secondary Schools and the American Council on Education. A veteran student who is eligible for educational benefits under one of the public laws or who has served on active duty at least one calendar year after July 26, 1946, must apply for such credit in the Office of Admissions and Records during the first semester of enrollment in regular status. Any credit tentatively allowed will become part of the student's permanent record after completion of a minimum of 12 semester hours at UNM.

Total semester hours of military credit to be accepted in a specific degree program will be at the discretion of the UNM degree-granting college in which the student is registered. A maximum of 8 semester hours elective credit is allowed for basic or recruit training, apportioned as follows: first aid, 2 semester hours; hygiene, 2 semester hours; physical education activity, 4 semester hours. Eight semester hours, apportioned the same as credit granted for service in the U.S. Armed Forces, will be granted to foreign students who have completed military training, provided they can show official credentials in support of their statements.

Credit earned in specialized army and navy programs conducted by college and university staffs is allowed in accordance with the recommendations of the administering institution. Credit for work done in formal training programs is allowed in accordance with the recommendation of the American Council on Education or on the basis of examinations here. U.S. Armed Forces Institute (USAFI) courses are acceptable if courses have been taken through accredited university extension divisions. Other USAFI courses may be accepted if recommended by the American Council on Education and validated by successful scores on end-of-course tests or subject standardized tests. USAFI correspondence courses not directly transferable or validated by these tests may be established by examination at UNM.

No credit is allowed for the College Level General Education Development Tests nor for the Comprehensive College Tests (General Examinations). The veteran student has the opportunity, while enrolled in regular status at UNM, to demonstrate his or her competence in any University subject and to earn credit in that subject by making a satisfactory grade on an examination to establish credit (see *General Academic Regulations*).

## Registration

**Advisement.** All freshmen and new transfers are required to consult an adviser before actually registering for classes. There are advisement centers in each of the degree-granting colleges, as well as a special center in the University College to advise those students uncertain about the specific field in which they wish to earn a degree. Students previously enrolled in the University also are urged to take advantage of this service.

**Registration Procedure.** Details of the registration procedure are contained in a special notice issued by the Admissions and Records Office and distributed to students in advance of each registration period.

**Payment of Tuition and Fees.** Payment of tuition and fees is required in advance of registration. Instructions for payment and payment deadline dates are made available to the student before each session. For specific information about tuition and fees, refer to the *Student Expenses* section of this catalog

**Selective Service Regulations.** Although the draft no longer is in effect, young men still are required to register on their eighteenth birthday. The Selective Service Office in Albuquerque can provide more information.

**Change of College.** Students who desire to change their registration from one college to another within the University must petition the dean or director of the college in which they are currently enrolled. This petition must be approved by both colleges and then is filed in the Office of Admissions and Records.

**Change of Address.** The student is expected to keep the University informed as to his or her current address. Any change of address should be reported immediately to the Office of Admissions and Records.

**Completion of Student Courses.** The University holds students responsible for completion of all courses for which they have been enrolled, unless the student obtains approval for a change in registration or files an official withdrawal from the University. A student not following proper course or University withdrawal procedures will receive a failing grade.

## Academic Rights and Responsibilities of Students

The University of New Mexico has established policies regarding students' educational records, academic integrity, grievances, classroom conduct, and identification. Complete texts of these policies may be found in the Pathfinder, the student handbook published and distributed by the Student Activities Center in the New Mexico Union. This information may also be obtained from the Office of Admissions and Records. A brief summary of some of these policies follows:

—No student's transcript or other record at the University will be released to the student or to any other person or institution until all the student's debts to the University have been paid or until satisfactory arrangements have been made. These debts include, but are not limited to, loans, such as the New Mexico Student Loan Program, library fines, etc.

—All enrolled and former students have the right to inspect and review their educational records at UNM. Also having legal access to students' records are various University, governmental, and judicial officials.

—Confidentiality of information contained in student records is administered by the Office of the University Secretary, in accordance with the Family Educational Rights and Privacy Act of 1974. Students have the right to challenge information

contained in their records through both informal and formal hearings. Students should direct specific questions regarding their records to the office maintaining the records in question.

—Each student is expected to abide by high standards of conduct in academic matters, including tests, quizzes, or assignments both in class and out. Any student judged to have engaged in dishonest academic behavior may receive a reduced grade for the work in question and a failing grade in the course, as well as other possible disciplinary action, including dismissal from the University.

—Nondisclosure or misrepresentation in filling out applications or other University records also will make a student liable for disciplinary action, including possible dismissal from the University.

—The classroom instructor is responsible for all classroom conduct, behavior, and discipline. Any action that would disrupt or obstruct an academic activity is prohibited.

—Use of classrooms or other facilities during scheduled activities is limited to enrolled students and University personnel. Use of these facilities during nonscheduled periods should be arranged with the appropriate department or other division of the University.

—A Student Standards and Grievance Committee has been created to hear complaints and render decisions in disputes between students and the University. The committee, composed equally of student representatives and faculty members, may be convened through the Office of the Dean of Students.

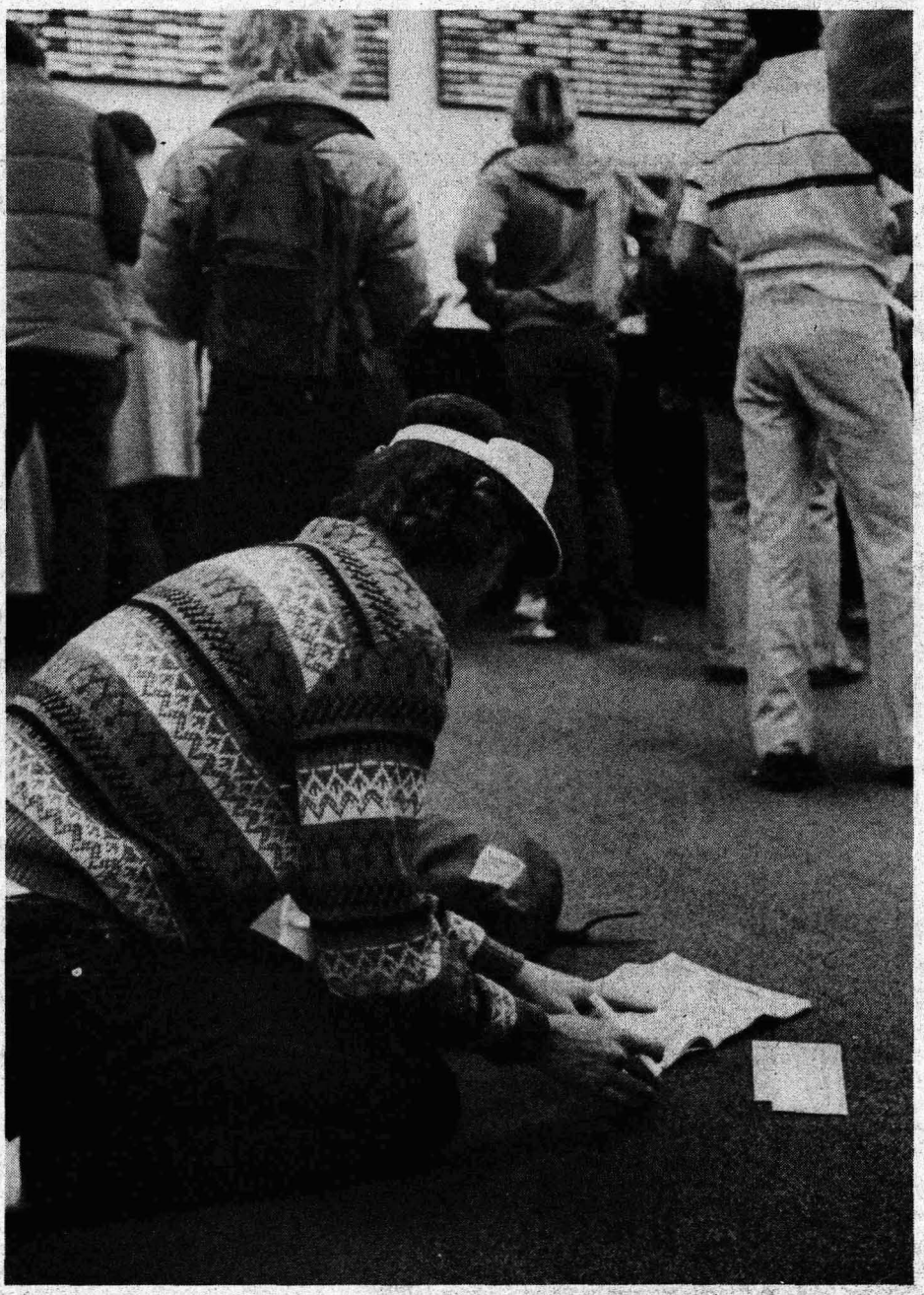
—The UNM Affirmative Action Office has been given responsibility for overseeing UNM's policy of nondiscrimination on the basis of race, color, sex, national origin, or physical handicap.

*—The University of New Mexico uses the individual student's social security number as the student's identification at the University. This number is used for record-keeping purpose only. The authority to use the social security number as the student's number comes from the Board of Regents and was adopted March 24, 1967. It is, therefore, mandatory that students disclose their social security number to the University for identification purposes.*

—Smoking is prohibited in all classrooms and teaching laboratories, including seminars.

**Change in Enrollment**

See *General Academic Regulations*.



# STUDENT EXPENSES

## Registration Fees

### Undergraduate

Per Semester

| | N.M. Resident | Nonresidents |
|---|---|---|
| Students enrolled for 12 to 18 hours: | | |
| Tuition and Fees | 360.00 | 1,116.00 |
| Student Group Health and Accident Insurance Premium (optional)[1] | 38.00 | 38.00 |
| Total Tuition and Fees with Group Insurance | 398.00 | 1,154.00 |
| All students enrolled for 1-11 hours, per hour: Tuition and Fees, per semester hour | 30.00 | 93.00 |
| Over 18 hours, Fixed amount Tuition and Fees | 360.00 | 1,116.00 |
| Plus, per hour over 18 (Over 18 hours, Non-refundable) | 30.00/cr.hr. | 93.00/cr.hr. |

Applied music fees of $32 per credit hour, in addition to regular tuition, will be charged all full-time University students enrolling for applied music courses beyond their curriculum requirements. Part-time students should consult the Music Department for a schedule of applied music fees.

### Law and Graduate

Per Semester

| | N.M. Resident | Nonresidents |
|---|---|---|
| Students enrolled for 12 to 18 hours: | | |
| Tuition and Fees | 346.00 | 1,102.00 |
| Graduate Student Association Fee-Nonrefundable | 11.00 | 11.00 |
| Total Tuition and Required Fees | 357.00 | 1,113.00 |
| Student Group Health and Accident Insurance Premium (optional)[1] | 38.00 | 38.00 |
| Total Tuition and Fees with Group Insurance | 395.00 | 1,151.00 |
| All students enrolled for 1-11 hours, per hour: Tuition and Fees, per semester hour: | 30.00 | 93.00 |
| Graduate Student Association Fee-Nonrefundable[2] | 11.00 | 11.00 |
| Students enrolling for more than 18 hours: Tuition and Fees | 357.00 | 1,102.00 |
| Nonrefundable surcharge for hours in excess of 18 semester hours | 30.00 | 93.00 |

Graduate students who enroll for master's thesis pay regular tuition and fee rates.

Graduate students who enroll for Doctoral Dissertation pay a standard fee of $75.00 for each semester or summer session of 699 enrollment, whatever the number of hours of 699 and whether the student is resident or nonresident.

[1] The group health and accidental insurance is available only to students enrolling for 6 or more semester hours. Participation is at the student's option, except that foreign students are required to have this coverage for themselves and dependents.

[2] The nonrefundable Graduate Student Association fee is charged once each semester to each law and graduate student regardless of the number of hours carried.

### Medical School

Per Semester

| | N.M. Residents | Nonresidents |
|---|---|---|
| Tuition and Fees | 545.50 | 1411.00 |

Student Group Health and Accident Insurance is arranged by the Medical School; premium to be determined.

## Other Fees

### Charges for Special Services

Admission, Registration Charge: (Non-Refundable)

| | |
|---|---|
| 1. Application Fee - UNM | $15.00 |
| 2. Late Registration Fee | 15.00 |
| 3. Engineering Co-op Fee | 20.00 |
| 4. Post Masters Certificate Program | 50.00 |

Administration Charges: (Non-Refundable)

| | |
|---|---|
| 1. Dishonored Check charge | $ 7.00 |
| 2. Check verification fee. | |
| In-state | .50 |
| out-state | 2.50 |

Other Charges

1. Charges for examination to establish or validate credit, (per credit hours) $10.00.
2. Graduation fee (Bachelor's and Master's candidate) $10.00.
3. Master's thesis binding charge $15.00.
4. Disseration binding charge $15.00.
5. Law student's dues of N.M. Bar Association (per year) $10.00.
6. Air Force ROTC activity fee, (per semester)$8.00.
7. Removal of incomplete grade, (per course) $2.00.

### Testing Fees

| | |
|---|---|
| A. Residual ACT Testing | $12.00 |
| B. Graduate School Foreign Language Test | 8.00 |
| C. Miller Analogies Test | 10.00 |
| D. College Preparation Testing | 5.00 |

### Special Course Fees (Non-Refundable)

A. Colleges/Schools Assessing Fees*

1. Anderson School of Management
2. Architecture
3. Engineering
4. Fine Arts

B. Special Course Fee**

| | |
|---|---|
| 1. English 010 | $60.00 |
| 2. English Creative Writing Workshop Fee | 4.00 |
| 3. Home Economics 150 | 2.00 |
| 252 | 5.00 |
| 254 | 2.00 |
| 456 | 2.00 |
| 4. Mathematics 010 | 60.00 |
| 5. Natural Science 010 | 60.00 |
| 6. Social Science 010 | 60.00 |

C. Others***

1. Horseback Riding
2. Sailing
3. Skin and Scuba Diving
4. Advanced Skin and Scuba Diving

### Laboratory Fees or Deposits

| Submodule | Fee | Lab Fee |
|---|---|---|
| 1. Nursing 225 | $ 3.50 | — |
| 2. Nursing 324 | 4.00 | $ 7.00 |
| 3. Nursing Fee (Level 1) | 14.00 | 14.00 |
| 4. Nursing Fee (Level 2) | 11.00 | 7.00 |
| 5. Nursing Fee (Level 3) | 9.00 | 14.50 |

6. Industrial Education Laboratory Fees (some classes), payable at class. Maximum Fee $10.00
7. Art Education Laboratory Fee - In addition to the regular tuition, a fee up to $10.00 per credit hour will be charged in each laboratory class, depending upon the nature of the materials necessary for the classroom.

### Deposit

1. Chemistry laboratory breakage deposit card
2. Pharmacy laboratory purchase card

Breakage tuition provides for a nominal amount of breakage in laboratory or other courses. Excessive breakage will be charged separately to the student responsible therefor.

### Other Recreation Courses Fee

1. Bowling Fee - Payable at bowling lanes.
2. Ice Skating - Payable at the ice arena.
3. Skiing, Ski Instruction Fee - Payable at first class meeting.
4. Skiing, Ski Lift Fee, Optional Equipment Rental, and Tram Fee - Payable at first meeting.

**Insurance Plan.** See *Student Health and Accident Insurance.*

**Associated Students Fee.** The assessment of this fee is a voluntary actior of the student body through its organization, the Associated Students of The University of New Mexico (ASUNM), and the University collects this fee as an accommodation to ASUNM. The amount o the fee is determined by vote of the ASUNM members and is subject to change at any time by a new vote. The fee is included in the fees paid by all full-time students. More information about the allocation of funds received from this fee

* Charges are made for classroom supplies and special services provided in many courses offered by departments of the above colleges/schools. Fees to be determined at beginning of semester. These course fee are assessed on the first day of the fifth week of the semester, first day of the third week of the summer session.

** These course fee to be assessed on the first day of the fifth week of the semester first day of the third week of the summer session.

*** These course fees to be assessed to students enrolled in these courses on the first day on the third week and to students who are still enrolled at the second class meeting if the course start-u time is other than the beginning of the semester.

may be obtained in the Pathfinder, as well as from ASUNM. Copies of the ASUNM budget may be examined in the Office of the Dean of Students.

**Graduate Student Fee.** Graduate students are assessed a nonrefundable fee determined by vote of the members of the Graduate Student Association (GSA) and set forth in their constitution. The University collects this fee for GSA. More information about the allocation of GSA funds may be obtained in the Pathfinder, as well as from GSA.

**Student Accounts.** Students are required to satisfy all financial obligations due the University before registering for a new semester.

**Refunds upon Withdrawal** Registration fees will be refunded (where the student withdraws or drops courses voluntarily) to the end of the fourth week of the semester as follows:

90% refund during the 1st week
80% refund during the 2nd week
60% refund during the 3rd week
30% refund during the 4th week

Students withdrawing after the fourth week of a semester, or those withdrawing at any time under discipline or because of academic deficiencies, will not be entitled to any refund.

**Financial Aid Refunds and Repayment**

Because student financial aid must be used solely for educational expenses, when a student receives a cash payment of financial aid and then withdraws or ceases to carry at least one-half of a full-time course of study, some of these funds may have to be repaid. The University of New Mexico utilizes the following refund/repayment schedule:

$$\text{Amount to be repaid} = \frac{\text{No. of calendar days between the withdrawal and midpoint of semester}}{\text{No. of calendar days between beginning of semester and midpoint}} \times \text{Amount disbursed in excess of X direct institutional charges}$$

Direct institutional charges include allowable tuition and daily living expense rate. Repayment of aid must be made prior to subsequent disbursement of any type of financial assistance.

## Estimate of Total Expense

The minimum amount necessary for expenses of resident students while attending the University is estimated as follows, per semester:

| | |
|---|---|
| Tuition and fees | $360.00 |
| Student health and accident insurance | 45.00 |
| Books and supplies | 105.00 |
| Board and room | 885.00 |
| Clothing, laundry, misc. | 690.00 |
| Total, per semester | $2,085.00 |

Nonresident students must add $756.00 per semester to the foregoing tuition.

## NEW MEXICO RESIDENCY FOR TUITION PURPOSES

A student who enters and remains in New Mexico principally to obtain an education is presumed to continue to reside outside the state and such presumption continues in effect until rebutted by clear and convincing evidence of bona fide residence.

By state law, a resident student is a person who has lived continuously in New Mexico at least one year before registering at UNM. This person also must be able to provide evidence of his or her intention to continue living in New Mexico; this evidence may consist of a driver's license, vehicle registration, voter registration, property ownership, steady employment, evidence of self-support.

Minor students (less than 18 years of age) are entitled to resident status upon proof of their parents having maintained a bona fide residence here at least one year preceding the student's registration.

Armed forces personnel (and their spouses and dependents) assigned to active duty within New Mexico may claim resident status for tuition purposes during their period of active duty here. The assignment of residence on this basis is temporary, however, and evidence of continued qualification must be presented before each session of enrollment.

International students with student or diplomatic visas are considered nonresidents for tuition purposes throughout their enrollment at UNM.

**Changes in Resident Status.** Any student seeking a change in resident status should first obtain a petition for in state tuition classification from the Office of Admissions and Records. A change may be made only after this petition has been completed and returned to the Admissions Office. An individual seeking a change from nonresident to resident status must submit a written request by the end of the fourth week of the semester in which the change is desired.

## Tuition and Fee Payment

All students are required to pay tuition and fees, or to make arrangements satisfactory to the University for such payment, prior to the beginning of registration. A penalty of $5.00 is assessed for late tuition payment, and a penalty of $15.00 is assessed for late registration.

Instructions for payment of tuition and fees are outlined in the Fee Announcement that is sent to the student with his or her appointment for registration.

Checks or money orders should be made payable to *The University of New Mexico:* they should be mailed to: The Cashier, The University of New Mexico, Albuquerque, NM 87131. *Do not mail cash.* To assure credit to the proper student account, payment must be accompanied by the course request card. All payments must also be accompanied by the student's name and Social Security number.

**Fees for Regular Session.** Fees are charged according to the number of semester hours carried by a student; auditors (students enrolled in a course for no credit) pay the same fees as students enrolled for credit. All tuition and fee charges are subject to change without notice.

# STUDENT HOUSING

## Residence Halls

**Facilities.** UNM residence halls are designed to provide attractive living accommodations that meet the academic needs of students and at the same time offer convenience and economy of housing and dining by being within easy walking distance of classrooms and recreational facilities.

Each of the University's six residence halls is supervised by a professional staff experienced in counseling and advising student groups. Residents of each hall elect a governing body that plans and organizes a full program of educational, governmental, social, and recreational activities, such as the annual Inter-dorm Olympiad and various intramural programs.

To meet the diverse needs and interests of its students, the University offers a variety of living and dining options. There are single-sex residence halls and other halls where men and women live on different floors or in different wings. Some halls are open for visitors 24 hours a day; others have limited visitation schedules. Similarly, numerous meal plans are available in La Posada Hall, the residence hall dining facility.

Details on all these options are contained in the housing materials accompanying the application for room and board. Students should confer with their parents regarding choice of a residence hall.

**Housing Policy.** Undergraduate students may live either on or off campus. Students electing to live on campus are required to sign a room and board contract obligating them for one entire semester.

Living quarters in residence halls are available to students with a minimum course load of 6 semester hours during the fall and spring semesters and 1 semester hour during the summer session. A portion of the residence hall capacity is reserved for returning students. The remaining space is assigned to students new to the University in the order of receipt of room and board contract, initial payment, and $25 deposit. All students occuping rooms in residence halls are required by contract to take their meals at the University dining hall, La Posada. Special diets are not provided.

**Room and Board Fees.** The 1980-81 rates for room and board range from $1,560 to $1,803 per academic year, depending on the type of living arrangement desired. To gain the maximum financial advantage from the room and board contract, students should remain in the residence halls for both the fall and spring semesters. Students in residence for the fall semester may extend their contracts for room and board for the spring semester. A deferred payment plan for room and board is available.

Rates include provision of a telephone in each student's room and University-supplied bed linens. The rates do not include room and board between semesters or for meals during official recesses listed in the academic calendar. The rates are subject to adjustment, with appropriate notice, reflecting changes in operating costs.

**Reservation Procedure.** Information concerning various living situations, housing programs, meal plans, room and board rates, and applications may be obtained by writing to: Housing and Collections Office, The University of New Mexico, La Posada Hall 201, Albuquerque, NM 87131, Tel. (505) 277-2606.

## Married Student Housing

**Facilities.** The University operates 200 married student apartments constructed in 1975 just south of the main campus. One-, two- and three-bedroom units are available. All one-bedroom units are furnished, while two- and three-bedroom units are designated as furnished or unfurnished.

**Housing Policy.** To be eligible for married student housing, one spouse must be a UNM student pursuing a degree and taking at least 6 semester hours. Single students with legal dependents also are eligible for married student housing. Apartment residents may remain in married student housing during the summer if they plan to enroll for the fall semester; it is not necessary for them to enroll for the summer semester.

**Rental Rates.** The 1980-81 monthly rental rates range from $176 to $240, including utilities. Ranges are subject to adjustment, with appropriate notice, reflecting changes in operating costs.

**Reservation Procedure.** Because the number of apartments is limited, applicants are placed on a waiting list if no apartment is available. Information concerning the reservation procedure, rental rates, and applications may be obtained by writing to: Married Student Housing Office, The University of New Mexico, 961 Buena Vista SE, Albuquerque, NM 87106, Tel. (505) 277-4265.

# FINANCIAL AID POLICIES

AS PART of its basic philosophy, the University of New Mexico is committed to ensuring that the opportunity for a post-secondary education not be denied to any student because of limited finances. To fulfill this goal, the UNM Office of Financial Aid administers a broad spectrum of loans, grants, jobs, and scholarships to meet the financial needs of all the University's students. Of the students who attended UNM during the 1979-80 school year, more than 60 percent received some form of financial aid.

The Office of Student Financial Aid and Career Services awards financial aid to students according to their individual needs. Parents of students are expected to contribute to their child's education according to their ability, taking into account their income, assets, number of dependents, and other relevant information. Students themselves are expected to contribute from their own assets and earnings, including appropriate borrowing against future income. Because the amount of assistance awarded is based on financial need, the amount of aid awarded is not publicly announced, and all information provided to the Office of Student Financial Aid and Career Services is regarded as confidential.

Students applying for financial aid complete one of several forms designed to determine, in accordance with state and federal guidelines, the difference between what the student or family is expected to contribute and the cost of attending UNM. Among the factors that determine the family's expected contribution are: 1) annual adjusted gross income as determined by the Internal Revenue Service; 2) home equity; 3) savings, stocks, or bonds; 4) other assets in the form of a business, farm, or real estate; 5) non-taxable income and benefits; and 6) a student's summer earnings and assets.

The costs of attending UNM include: 1) tuition and fees; 2) room and board; 3) books and supplies; 4) transportation; and 5) personal expenses.

To qualify for financial aid programs at UNM, with the exception of academic scholarships, students must meet the following general requirements (requirements for individual programs may vary): 1) demonstrate financial need; 2) be a U.S. citizen; 3) show academic promise or progress; and 4) carry at least 6 semester hours. For maximum student financial aid consideration, students should apply prior to March 1.

## Financial Aid Programs

Following is a brief summary of the financial assistance programs administered by the Office of Student Financial Aid and Career Services. For more complete information about these programs, including eligibility requirements, contact: The Office of Student Financial Aid and Career Services, Mesa Vista Hall, The University of New Mexico, Albuquerque, NM 87131, Tel. (505) 277-2041.

**Grants.** Grants are awarded to students showing academic promise or progress. Grants, like scholarships, do not have to be repaid.

*—Basic Educational Opportunity Grants (BEOG).* These federal grants, ranging from $200 to $1,800, are intended to provide a financial basis on which needy students can build a post secondary education.

*—Supplemental Educational Opportunity Grants (SEOG).* Federal grants ranging from $200 to $500, this program is designed for students with exceptional financial need.

*—New Mexico Student Incentive Grant (NMSIG).* This provides state and federal funds, in amounts ranging from $200 to $500, to extremely needy New Mexico residents.

**Student Employment.** Student employment is provided to students who wish to work part time while pursuing their education. Jobs normally found on campus range from the very general to those that are highly technical.

*—College Work Study Program (CWSP).* This is a federally funded program designed to provide income and work experience in a student's field. Work is limited to 20 hours a week, except for summers, holidays, and vacations.

*—Off campus employment.* Part time jobs available off campus are listed with the Office of Student Financial Aid and Career Services.

*—Engineering and Business Coop.* Cooperating companies and agencies provide work experience for sophomore engineering and junior business students through this program administered through the Cooperative Education Office.

**Loans.** Student loans provide an opportunity to borrow against future earnings, with relatively low interest rates and favorable repayment schedules.

*—National Direct Student Loan (NDSL).* This is a long term, low interest loan program for students meeting the financial need requirement.

*—New Mexico Student Loan (NMSL).* Available only to New Mexico residents, this program provides long term, low interest rates to qualified students.

*—Federally Insured/Guaranteed Student Loan (FISL/GSL).* This program provides long term, low interest loans to eligible students through private lending institutions, such as banks, credit unions, and home savings and loan associations.

—*Short term loans.* Loans up to $100 and payable within 90 days are available to qualified students through the Office of Student Financial Aid and Career Services.

**Scholarships, Prizes, and Awards.** More than 400 individual scholarships, prizes, and awards exist at UNM for qualified students. Students receiving scholarships awarded through the Office of Student Financial Aid and Career Services must reapply each year by March 1. For students applying only for a scholarship and no other financial aid, the only form required is the New Mexico Financial Aid and Scholarship Application. Students applying for departmental or college scholarships should contact those offices.

—*Presidential Scholarship Program.* Presidential Scholarships of $900 are awarded annually to 100 New Mexico high school seniors who have demonstrated exceptional leadership and academic ability.

—*Academic scholarships.* Academic scholarships of $350 a year are awarded to entering freshmen students ranging in the top 10 percent of their high school graduating classes.

—*College major related scholarships.* Several departments award scholarships to beginning freshmen or upperclass students. Beginning freshmen should write directly to the College of Engineering or the Department of Music for more information. Juniors and seniors or graduate students may inquire directly to the School of Architecture and Planning, the Robert O. Anderson Schools of Management, the College of Engineering, the Geology Department, the Law School, the Medical School, and the College of Nursing.

—*Other scholarships.* A wide variety of organizations offer scholarships to eligible students. Many scholarships are awarded through the Office of Student Financial Aid and Career Services. All students applying for an academic scholarship will be considered for these individual scholarships. The Navy and Air Force offer scholarships to students enrolled in their programs; contact them directly for details.

## Other Programs and Benefits.

**Professional Programs.** For students admitted into a nursing program or law enforcement/criminal justice academic program, additional student financial assistance programs exist. Contact the Office of Student Financial Aid and Career Services for details about these.

**Bureau of Indian Affairs (BIA) Programs.** Each year the BIA provides grants to assist eligible Native American students in meeting their educational costs. The amounts of the grants vary according to the student's financial need, and the funds are available through the student's BIA area office or tribal scholarship office.

**Social Security Educational Benefits.** The U.S. Social Security Administration provides funds to assist dependents of Social Security beneficiaries in attending college. Details may be obtained from local Social Security offices.

**Veterans Administration Educational Benefits.** The purpose of this program is to assist Vietnam era veterans pursuing a post secondary education. Application is made through the Veterans Administration.

**Vocational Rehabilitation.** Through the New Mexico Division of Vocational Rehabilitation, the state and federal governments offer tuition assistance to students with physical or emotional disabilities. Other assistance also may be given to those physically handicapped students who financially are unable to provide the services themselves. Students wishing to apply for this assistance should contact one of the New Mexico Vocational Rehabilitation offices.

## Career Planning and Placement.

The Office of Student Financial Aid and Career Services works with all UNM students and graduates in achieving their career and employment goals, providing assistance and advice to students and alumni interested in commercial, governmental, educational, or service professions.

To do this, the office maintains close contact with all colleges and departments within the University. It acts as a general clearinghouse for registrants seeking employment and for employers seeking college trained personnel. Prospective employers are provided with administrative assistance and facilities for interviewing candidates. Registrants are furnished assistance in preparing a career file encompassing biographical data, scholastic and educational achievements, employment, experience, professional activities, and letters of recommendation. The professional credential or career records are maintained on file for alumni as long as desired.

The office also makes available to eligible students and alumni information concerning new or existing career opportunities, trends in employment, and educational requirements. The office monitors the conditions and trends of the nation's job market, and it maintains close contact with representatives of commerce and education.

The career service division of the Office of Student Financial Aid and Career Services is located on the second floor, south wing, of Mesa Vista Hall; all career services provided to students and prospective employers are free.

## VETERANS AFFAIRS

The University of New Mexico is approved for certification of students eligible for educational assistance under the G.I. Bill, and the Veterans Affairs Office, located in Mesa Vista Hall, was established to provide the services required.

Persons applying to UNM who are eligible for veterans' benefits should follow the requirements and procedures outlined in the Admission and Registration section of this catalog. Students receiving educational assistance must be making satisfactory progress toward an educational goal to continue receiving payment (see the *Veterans Affairs Office* for detailed requirements).

# STUDENT SERVICES

## Finding Out About UNM and Its Student Services

A WIDE RANGE of organizations and services are available on the UNM campus to meet the needs of the University's students, with the Office of the Dean of Students having coordinating supervision of programs and activities affecting student life outside the classroom.

The most comprehensive directory of student services at UNM is the UNM Pathfinder, the student handbook published annually by the Student Activities Center, located on the main floor of the New Mexico Union building. The UNM Pathfinder gives general information, including office locations and telephone numbers, about academic and cultural programs, athletics and recreation, campus organizations, entertainment, financial services, food, health and medical assistance, housing, information and orientation, UNM policies affecting students, transportation, and other services and programs. Free copies of the UNM Pathfinder may be obtained from the Student Activities Center, as well as from the Student Information Center in the New Mexico Union, 277-4606.

The Student Activities Center also publishes the annual student organization handbook. This lists chartered student organizations on campus, including the names and telephone numbers of organization officers and sponsors. Among the types of organizations listed are ethnic and cultural, fraternities and sororities, graduate, honorary, military, political, professional and departmental, religious, residence hall, service, special interest, and sports and recreation. Copies of this handbook may be obtained free from the Student Activities Center, which also assists students in organizing and chartering new student organizations.

Other informational materials available through the Student Activities Center are bi-monthly calendars of events on campus, campus maps, a calendar of summer session events, and a campus guide.

Another source of information about student services and activities is the Student Information Center, 277-4606, in the main floor lobby of the New Mexico Union. Students who work at the Student Information Center have details about athletic and entertainment events, registration, buses, the want-ad board, student government, the ride board, and so forth. They also may provide maps and referrals to other campus offices.

For persons wishing to obtain information about UNM by telephone, UNM Information Services has 40 taped messages available describing student services, as well as University policies and procedures. The number to call is 277-6281.

In addition, the Student Activities Center has a tape-recorded message listing each day's scheduled events on campus. The number is 277-5243.

Persons wishing to reach the University information operator should dial "O "from on-campus phones or 277-0111 from off-campus phones. The operator may give numbers for University offices and officials from 8:00 a.m. to 5:00 p.m. weekdays.

A student directory listing each student's name, local and home address, telephone number, and academic classification is published by the Student Activities Center. These directories are available to students at the Student Information Center in the New Mexico Union and at the UNM Bookstore. A validated student ID is required to obtain a directory.

To help new students become acquainted with the University, the Office of the Dean of Students prepares an orientation program prior to the beginning of each academic session. Brochures with a schedule of specific orientation events are mailed to all new students before each semester. The events planned for orientation sessions generally include information sessions about services at UNM, campus tours, open houses in various academic divisions and student service centers, advisement and registration, and entertainment. More information about orientation programs may be obtained by contacting the Office of the Dean of Students, Mesa Vista Hall, 277-3361.

The Office of School Relations, located at 1716 Las Lomas NE, 277-5161, provides information about the University for prospective students. This information includes degree and course offerings, admission requirements and procedures, housing, expenses and financial aid, registration, and special services and programs. The Office of School Relations also arranges campus tours.

# GENERAL ACADEMIC REGULATIONS

STUDENTS are solely responsible for complying with all regulations of the University, their respective colleges, and the departments from which they take courses, as well as for fulfilling all degree requirements. Therefore, students are advised to familiarize themselves with the academic regulations of the University.

## Class Hours and Credit Hours

A class hour consists of 50 minutes. One class hour a week of recitation or lecture throughout a semester earns a maximum of one credit hour. One class hour a week of laboratory, orchestra, chorus, studio, or physical training throughout a semester earns from one-third to one-half credit hour.

## Course Numbering System

Courses offered at the University are numbered from 001 through 799:
—001 to 099 courses may or may not carry credit, but they are not applicable toward a baccalaureate degree.
—100 to 199 courses, lower division, normally are open to freshmen.
—200 to 299 courses, lower division, normally are open to sophomores.
—300 to 499 courses, upper division, normally are open to juniors and seniors, fifth year undergraduates, and graduates.
—500 to 799, graduate and professional, normally are open only to students enrolled in the graduate schools, the School of Law, or the School of Medicine.

Freshmen may in some instances qualify for courses numbered in the 200s. Courses numbered 300 and above are not open to lower division students (freshmen and sophomores) except in rare instances and then only with the approval of the college dean. When appropriate, an instructor may disenroll freshmen from courses numbered 200 and above and sophomores from courses numbered 300 and above. See the individual college sections of this catalog for specific regulations.

## Grades

The grades awarded in all courses are indicative of the quality of work done. Their significance in most courses is as follows:

A, Excellent. 4 grade points per credit hour.
B, Good. 3 grade points per credit hour.
C, Satisfactory. 2 grade points per credit hour.
D, Barely Passed. 1 grade point per credit hour.
F, Failed. F is also given in any course which the student drops after the sixth week of a semester or third week of a summer session while doing failing work.
CR, Credit. Gives credit for the course but is not computed in the scholarship index. At the graduate level CR is used to report completion of a master's thesis or doctoral dissertation. (See the following pages for specific information concerning CR/NC option grading.) CR, credit is the equivalent of at least a grade of C.
NC, No Credit. Not computed in scholarhip index. At the graduate level NC is also used to report unsatisfactory completion of master's thesis or doctoral dissertation. Certain workshops and courses may be offered under CR and NC as defined above, only with the approval of the Admission and Registration Committee.
PR, Progress. This grade is used to indicate that a thesis or dissertation is in progress but not complete. When the thesis or dissertation is complete, CR or NC is reported.
I, Incomplete. The grade of I is given only when circumstances beyond the student's control have prevented completion of the work of a course within the official dates of a session.
WP, Withdrawal Passing. Effective with the fall semester, 1978, all approved course withdrawals after the sixth week of classes are subject to the grade of WP, if passing the course at the time of withdrawal.
WF, Withdrawal Failing. Effective with the fall semester, 1978, all approved course withdrawals after the sixth week of classes are subject to the grade of WF, if failing the course at the time of withdrawal. The grade of WF will be calculated as a failing grade in the student's grade-point average.
WNC, Withdrawal, No Credit. Effective with the fall semester, 1978. Not computed in the scholarship index. WNC indicates officially withdrew with unsatisfactory (D or F) performance in CR/NC option enrollment or course approved for CR/NC by the Committee on Admissions and Registration.

### Grades in Honors Courses

Grades assigned in the General Honors Program, the Undergraduate Seminar Program, some departmental honors courses, and a few seminars are as follows:

A, Honors. 4 grade points per credit hour.
CR, Credit. Gives credit for the course

but is not computed in the scholarship index.

NC, No Credit. Not computed in scholarship index.

**Credit (CR) Grade Option Enrollment for Undergraduates Only.** Beginning the fall semester 1975, the following amended University regulations allowed students to take certain courses on the Credit Grade Option basis:

1. Only one CR option course a semester will be allowed.
2. No more than 24 hours under this option will be allowed toward graduation.
3. CR credit is the equivalent of at least a grade of C.
4. The CR option is now a CR/NC system. Students who do not satisfactorily complete a course under CR/NC grading will receive an NC.
5. Semester hours earned in courses for which grading is specifically approved for CR/NC are not included in the 24-hour maximum allowed toward a student's degree with the CR/NC grade option.
6. The following may not be taken under the CR option:
   A. Courses in the General Honors Program and the Undergraduate Seminar Program.
   B. Courses that are part of the student's major (as defined by the major department) with the exception of those courses especially approved for use of CR/NC grading (such as Guid 492, Workshop in Counseling.).
   C. In some departments and colleges, courses that are part of the student's minor (see specific college and departmental requirements).
   D. Examination to establish credit.
   E. Correspondence courses.
   F. Courses the student is repeating after first having taken the course under the regular grading systems.

*Note:* Students may not be penalized by a department if, when selecting or changing a major field, they have taken a course in their major on a CR option basis.

*Warning:* Certain undesirable consequences may result from exercising the CR/NC option. Some schools, scholarship committees, and honorary societies do not accept this grading system and convert grades of "Credit "to C and "No Credit "to F when computing grade point averages or otherwise penalize students who use this option.

*Policy on CR/NC Option for Graduate Students in Lower Division Courses.*

—The graduate student has the option of enrolling in a 100-200 level course on a CR/NC basis. In no case will such an enrollment count toward graduate degree requirements or be computed in the graduate GPA. If a graduate student with undergraduate deficiencies is required by the major department to take a lower-division course, the CR/NC options is not available to the student.

**Removal of Incomplete (I) Grade.** No grade except Incomplete (I) may be raised by completion of other extra work or by a special examination. The student may change the I to a passing grade by satisfactorily performing the work perscribed by the instructor in a manner determined by the instructor, with the approval of the dean or director of the students college. The required work must be completed 1) by the published ending date of the next semester in residence, or 2) within the next 4 semesters if the student does not reenroll in residence.

The student should make arrangements with the instructor within a reasonable time for the completion of the work required to remove the I. After these arrangements have been made, the student obtains from the office of his/her dean or director a permit card to remove the I, pays a $2 fee, and takes the card to the instructor. The instructor then completes the card and returns it to the Office of Admissions and Records, which makes the official entry on the student's record. The removal form must be in the Office of Admissions and Records by the last day of the appropriate semester.

A grade of I that is not removed during the periods and by the procedure described above automatically becomes an F.

When any course is not completed and a grade of I is assigned, reregistration in the course may not be used to complete the course and remove the I. Effective with the fall semester of 1980, a student may repeat any course but will receive credit only once.* All attempts and all grades will be calculated in the student's scholarship index.

**Change of Grade.** Any change of grade (except removal of an Incomplete) after the grade is on record in the Office of Admissions and Records may be made only after the reasons for such a change have been submitted in writing by the instructor concerned and approved by the Admission and Registration Committee. *Any change in grade must be requested within 12 months after the end of the grading period.*

**Scholarship Index.** A student's academic standing is referred to in terms of a scholarship index calculated by dividing the total number of grade points (see *Grades)* earned at the University by the total number of hours attempted. These hours must be attempted in courses with letter grades and the courses must be numbered 100 or above. Hours given a grade of W, CR, NC, or I are excluded in calculating the scholarship index. Honors and prizes depending on academic achievements are determined by ranking students according to the scholarship index.

* Does not apply to those courses noted "May be repeated for credit more than once. "

## Student Enrollment

Except with special college approval, undergraduates may not take more than 20 semester hours during regular sessions and 10 semester hours during summer session. Students in non-degree status who have not earned at least a bacculaureate-level degree and plan to take more than 7 semester hours must obtain permission from the Dean of Continuing Education and Community Services.

## Changes in Enrollment

**Change in Program of Studies.** Detailed procedures for accomplishing change in a student's program of studies are available from the student's college office or from the Office of Admissions and Records.

*ADD.* A course may not be added to a student's program after the second week of the semester or the first week of the summer session (see the *Academic Calender).*

*DROP.* A student has the right to drop a course or courses without a grade during the first six weeks of the semester or the first three weeks of the summer session. When a student drops a course after these deadlines, the student must have approval from the dean or director of the student's college. This approval is limited to hardship cases involving circumstances beyond the student's control. If, after receiving approval from the dean, the student is passing the course at the time of dropping as determined by the course's instructor, the grade issued will be WP. If the student is failing, the grade will be WF (WNC for graduate students). The WF will be computed in the student's grade point average.

Students are responsible for the completion of every course for which they have registered; if they drop a course at any time without complying with the official change of program procedures, they will receive a grade of F in the course. (See below, *Withdrawal from the University,* for procedures for dropping all courses.)

**Change in Grading Option.** No change in grading option (including audit, credit option, and letter grade) in any course may be made after the fourth week of the semester or the second week of the summer session.

After registration has been completed, a change in grading option requires the filling out of a Program Change Request.

It is solely the student's responsibility to make certain that he or she is registered

any course on the proper grading option. (Graduate students see *Graduate Programs Bulletin.)*

**Addition of Independent Study or Extension Courses to Program.** A resident student may enroll for independent study and extension courses only when the addition of such courses does not cause his or her program to be over the maximum load allowed and only after approval has been given by the dean or director of his or her college.

## Withdrawal from the University

When students wish to withdraw from all courses in which they are enrolled during the semester or summer session, they must obtain a withdrawal card from the Office of the Dean of Students. When a student withdraws officially from the University during the first six weeks of the semester or the first three weeks of the summer session, no grades are assigned.

The notation on a student's record will be "withdrew " and the date of the transaction. One exception to this policy is the grade of F assigned under University regulations relating to student dishonesty.

If a student withdraws officially from the University after the end of the sixth week of the semester or the third week of the summer session, grades of WP or WF (WNC for graduate students), as determined by the student's instructors, are shown on the student's record. All withdrawals from the University after the sixth week of the semester or third week of the summer session are subject to petitioning and gaining the approval of the dean or director of the student's school or college. Please note that the grade of WF is computed in the student's grade-point average.*When students leave the university during a semester and do not carry out their withdrawal according to these regulations, they become liable for a grade of F in all their classes, even though they may have been passing their courses up to the time of leaving.*

**Military Withdrawal.** Under faculty regulations, undergraduate students who normally withdraw from the University to enter military service after completing 12 weeks of instruction will receive full credit for each course in which they are enrolled provided the instructor certifies a grade of C or better for the course at the date of normal withdrawal. These students will receive a grade of WF if the instructor certifies a grade of less than C.

Final semester seniors who have satisfactorily completed at least half of the work in courses for which they are enrolled at semester, provided these would complete their degree requirements, may be certified for graduation by the faculty of their colleges. Military orders or evidence of enlistment must be made available to the Dean of Students at the time of withdrawal.

## REPETITION OF A COURSE

Effective with the 1980 fall semester, a student may repeat any course without special permission but will receive credit only once. (This does not apply to courses noted "May be repeated more than once".) ALL attempts and ALL grades will be computed in the student's scholarship index. When any course is not completed and a grade of I (Incomplete) is assigned, reregistration in the course cannot be used to to complete the course and remove the I.

A student who fails a course at UNM and repeats the same course with a grade of C or better at another college or university may have the credit accepted for transfer, but the F earned at UNM will continue to be computed in the Scholarship Index.

During registration, it is the responsibility of a student repeating a course to notify the Office of Admissions and Records by completing the repetition-of-course section of the registration form.

**AUDITED COURSES.** A student may register for a course as an auditor, receiving no credit, provided permission of the instructor concerned is obtained. A student changing to audit status after late registration does not need instructor permission; however, any change to audit is governed by "Change in Grading Option "regulations. An auditor who fails to attend classes may be dropped at the instructor's request. The fee for audited courses is the same as for credit courses.

## Scholastic Regulations

### Suspension

*University College.* Students carried on academic probation are given one semester or summer session to raise their scholarship index to the required level; if they have not done this by the end of that term, they face possible suspension or dismissal. No students, however, are subject to suspension or dismissal because of low grades until the end of the semester or summer session in which the cumulative hours attempted exceed 16.

*Degree-Granting Colleges and Non-Degree Status.* As with University College, students on academic probation have one semester or summer session (totaling at least 16 hours) in which to raise their grades to the required level. Students should become familiar with the academic regulations of their specific school or college.

Suspended students are not eligible to reenter the University for a period of one calendar year from the date of suspension. Readmission after the suspension period ends requires the approval of the dean or director of the student's college.

Students suspended for poor scholarship will be considered as on probation when they return to the University, as will students who withdraw from the University while on probation (unless their withdrawal makes them subject to suspension).

At registration time, a dean may require a student on probation to enroll for the minimum number of hours and may at any time require a student on probation to drop hours that seem beyond his or her ability.

The probation and suspension regulations described above apply only at the end of a semester or summer session. During one of these terms, however, a dean of a college may refer the case of a delinquent student to a college committee on scholarship, and this committee may recommend to the dean probation or suspension of the student from the University.

**Attendance.** Students are required to attend all meetings of their classes, unless excused by the instructor. No extensions of vacations may be given, regardless of the location of the students' homes. Nonattendance at classes due to late registration is considered the same as absence after registration.

Instructors will keep a record of class attendance and will report excessive absences to the Records Office. A student with excessive absences may be dropped from a course with a grade of WF, upon recommendation of the instructor.

Absences due to illness, field trips, athletic trips, and so forth are to be reported by the student to the instructor and to the Office of the Dean of Students. These reports do not relieve the student of the responsibility for lost work, and it is the obligation of the student to take the initiative in arranging with the instructors to make up work missed.

If a student is admitted to the Student Health Center Infirmary, the Dean of Students Office automatically is notified. If a student has been ill and needs verification, he or she should notify the Dean of Students Office, 277-3361. It is expected that professors normally will indicate at the beginning of a semester whether students will need verification.

Students who are absent without approved excuse from final examinations or other closing exercises of their classes will be given the grade of F.

**Dishonesty in Academic Matters.** Each student is expected to abide by the highest standards of honorable conduct in academic matters. Dishonesty in quizzes, tests, or assignments, whether in the classroom or out, may be cause for dismissal from the University.

Nondisclosure or misrepresentation in filling out applications or other University records will make a student liable for

disciplinary action, including possible dismissal from the University.

**Transcripts of Record.**

No charge is made for transcripts of record requested by the student to be sent to other collegiate institutions, state departments of education, employers, or prospective employers. The University reserves the right to determine a "reasonable " number of transcript requests per student. Requests exceeding that number will cost 25 cents a page. A student may be issued without charge one transcript for personal use each year during enrollment. *Transcripts of record may not be issued until all financial obligations to the University have been satisfied.*

## Examinations

**Regular Examinations.** Examinations other than final examinations are to be given during each undergraduate course at the discretion of the instructor. Final examinations are to be given at the end of each undergraduate course as scheduled during the final exam week, except in courses where the instructor believes final exams are inappropriate.

**Examination to Establish or Validate Credit (Challenge a Course).** Students admitted to or enrolled in regular status in undergraduate colleges of the University may, with appropriate written approval, take an examination to establish or validate credit in courses appearing in the University's general catalog, in which they have not been previously enrolled at the University of New Mexico. Students enrolled in the Graduate School have the same privilege, except that only undergraduates credit can be earned in this manner. Credit cannot be earned by examination to establish credit in nonprofessional physical education activity courses and in some professional physical education courses. A check with the department will be necessary to determine which professional physical education courses can be challenged. Contact with and written permission from the department concerned, and written permission from the dean or director of the offering college are required. Upon receipt of those written authorizations, the dean or director of the student's college will issue a permit for the examination. Examination to establish credit can be taken only during the period of the week before classes start through the ending date of the semester or summer session. Credit will be allowed and placed on the student's permanent record as of the semester in which the examination is completed and will not count in the student's grade point average prior to the completion of that semester. Only grades of C or better will be recorded. If the student does not earn a grade of C or better, a second examination for that course will not be permitted. Credits earned by examination at the University of New Mexico count toward graduation and residence requirements. (See *Student Expenses.)*

**Other Special Examinations.** For information concerning the Advanced Placement Program and the College Level Examination Program of the College Entrance Examination Board, see "Undergraduate Assessment Program. " See also degree requirements under *Admission and Registration.*

## Degree Requirements

**Bachelor's Degrees.** Candidates for any undergraduate bachelor's degree offered by any of UNM's colleges must meet several all-University minimum degree requirements and are subject to several all-University limitations. These are:

1. A **minimum** of 128 acceptable semester hours of credit must be earned.
2. A maximum of 24 semester hours of CR/NC credit grading option courses may be applied toward a bachelor's degree.
3. A maximum of 40 semester hours of extension and correspondence (independent study) credit may be applied toward a bachelor's degree and no more than 30 of these hours may be correspondence credit.
4. Residence credit requirement: A minimum of 30 semester hours of credit, exclusive of extension and correspondence (independent study) credit, must be earned at UNM. Of these 30 semester hours in residence, 15 semester hours must be earned after the candidate has accumulated 92 hours of earned semester hour credit; these 15 hours, however, do not necessarily have to be the last hours of a degree program. A student may fulfill all or part of this residence requirement by attending summer session.
5. Major and minor residence requirements: At least one-half of the minimum number of credit hours required for major study and one-fourth of the minimum for minor study must be class or laboratory work in residence at UNM. The major department or the director of an interdepartmental major may modify this ruling when a senior transfer student plans to complete a major by presenting credit hours earned in residence at another institution. Any modification, however, may not be below one-fourth of the total minimum hours required for the major.
6. The student must have achieved a cumulative scholarship index of 2.0 or a 2.0 grade point average on the last 128 semester hours of degree work.

Additional degree requirements for a specific bachelor's degree will be found in the appropriate college section of this catalog.

**Associate Degrees.** Candidates for any associate degree offered by any of UNM's colleges must meet several all-University minimum degree requirements, as well as several all-University limitations. These are:

1. A minimum of 60 acceptable semester hours must be earned. Technical-vocational work (up to the limit specified below) may be included in these 60 hours, upon approval of the appropriate degree-granting college.
2. A minimum of 15 semester hours must be earned in residence at UNM, exclusive of extension and correspondence credits. The remainder may be acceptable transfer credits earned at fully accredited institutions of higher learning and/or at regionally accredited technical-vocational institutions (see also *Transfer Students* for transfer credit regulations).
3. Of the 60 hours minimum, no more than 9 semester hours may be earned by extension or correspondence.
4. The student must achieve a scholarship index of at least 2.0.
5. For associate of arts or associate of science degrees, the program must include a minimum of 18 semester hours in the following:
   A. At least 6 semester hours in communication skills (English, speech).
   B. At least 6 semester hours in arts/ humanities/ social sciences.
   C. At least 6 semester hours in mathematics/natural sciences/ behavioral sciences.
6. For associate of professional studies/ associate of applied science degrees the program must include a minimum of 30 semester hours in the following
   A. At least 6 semester hours in communication skills (English, speech).
   B. At least 6 semester hours in arts/ humanities/ social sciences.
   C. At least 6 semester hours in mathematics/natural sciences/ behavioral sciences.
   D. At least 12 semester hours in othe courses offered either by the degree-granting college or by othe UNM colleges.

**Changes in Requirements.** In order tha changes in degree requirements will not disrupt a student's degree program, UNM has adopted the following policy. When a student first enrolls in a degree-granting college at UNM, the degree requirements in force at that time apply to the entire

degree program, but only if 1) the program is continuous and not interrupted, 2) the student does not transfer to another degree-granting college, and 3) the degree is earned within six years of first enrollment. If a student interrupts his or her attendance at UNM or transfers to another degree-granting college of the University, then the student is governed by the degree requirements in force at the time of readmittance or transfer.

**Two Undergraduate Degrees.** Two undergraduate degrees may not be granted a student until he or she has earned the equivalent of 5 years' college work (as represented by a minimum of 30 semester hours above the requirements for the first degree). The student also must fulfill all requirements for both degrees, including residence requirements.

A transferring graduate should notify the Office of Admissions and Records when applying for admission if the student plans to work toward a second undergraduate degree.

The degree of Bachelor of University Studies may not be used as a second undergraduate degree. Completion of a second major under a Bachelor of Arts or Bachelor of Science program is recorded on the student's permanent record but does not result in the awarding of a second Bachelor of Arts or Bachelor of Science degree.

The student who has completed a baccalaureate degree and who is seeking a second undergraduate degree will be reclassified by the new degree college in accordance with the hours and requirements completed toward the new degree. Residence credit requirements for the second degree will be determined on the same basis as those for the first degree.

**Extension and Independent Study or Credit Hours Allowed Toward Degree.** UNM allows credit for independent study correspondence and extension courses at UNM or through other fully accredited colleges and universities.

Credit for extension and independent study courses completed in institutions not accredited by regional accrediting associations is not accepted for transfer, although a student who has completed such correspondence or extension work in a course comparable to one at UNM may establish credit here by special examination (see *Examinations).*

The hours earned by independent study or extension from accredited institutions other than UNM may be counted toward degree requirements, but the grades will not be included in the student's grade point average (see *Scholarship Index).* Courses taken from other institutions must correspond to those offered at UNM.

Any graduating senior not in residence who expects to offer credits earned by independent study toward fulfillment of degree requirements must have prior approval of his or her college's dean. The student is solely responsible for complying with all regulations stated in the current Independent Study Bulletin.

**Commencement.** Commencement exercises are held once a year at the end of the spring semester. Attendance is optional. Students whose requirements were completed and degrees conferred in the preceding summer session or fall semester, as well as those who complete requirements in the spring semester, are invited to attend.

## Honors Work/Graduation With Honors

Students may graduate with General Honors (Honors in General Studies), or Departmental Honors, or both. The level of General Honors attained is determined by the General Honors Council and may be cum laude, magna cum laude, or summa cum laude. Students must apply to the General Honors Program for candidacy for graduation with General Honors.

The levels of Departmental Honors awarded are also cum laude, magna cum laude, and summa cum laude. Students must also apply for candidacy to their departments (or in colleges without departments to the college).

Graduation with General or Departmental Honors is not automatic; application for candidacy is required.

### The General Honors Program

The General Honors Program is housed in the Humanities Building, Room 114, in the Honors Center. Participation in this program, leading to graduation with Honors in General Studies, is by application only; however, all undergraduates interested in a challenging intellectual program with emphasis on interdisciplinary study are encouraged to apply. Students are selected on the basis primarily of their academic potential (ACT scores), record in college level work, and intellectual motivation. Most General Honors courses are taught in the format of the small seminar (limited to approximately 15 students) where emphasis is on discussion, student participation, and self expression. The program also provides opportunities for independent study under the direction of a faculty member and informal activities.

Core courses, Honors seminars, are offered at the 100, 200, 300, and 400 levels; the lower division courses offer an introduction to the history of ideas while upper division courses deal more specifically with the history of ideas or culture. Lower division students are not necessarily restricted to 100 and 200 level courses but may take other Honors courses with permission. (See pp.124 for course descriptions.)

*Students are encouraged to join the General Honors Program in the first semester of their freshman year and to continue taking Honors courses as grou requirements in various colleges and as electives. However, second semester freshmen, and sophomores, and first semester juniors may join the program.*

Formal requirements for graduation with Honors in General Studies are:

1. Completion of 9 credit hours at the 300 level or above (or permission of the Director to count 100 or 200 leve courses as a part of this requirement)
2. Completion of 6 additional credit hours selected from any General Honors courses or from courses offered in the Undergraduate Semina Program.
3. A 3.2 overall scholarship index.
4. Recommendation by the Director and Certification by the General Honors Council.

Performance in Honors courses is not judged by mechanical, quantitative standards, nor are students graded on a curve. Honors faculty make detailed evaluations of a student's progress on confidential forms. Students are encouraged to read the evaluations made by the faculty, and should they disagree have the privilege of writing their own rebuttal. Grades in Honors courses are A/ Credit/No Credit/Incomplete (although sometimes an instructor may elect to grade students on the Credit/No Credit basis only). The grading system for each course is listed in the Course Description Brochure furnished students at the time of preregistration. Under this system students may be rewarded for superior performance (A) but not penalized for ordinary, satisfactory performance (CR) or for failure to complete the course, etc. The program is designed to offer intellectual challenge, and students are expected to achieve at their highest levels; at the same time competition for high grades is minimized. Taking Honors courses under this grading system does NOT cancel the right of students to elect one course per semester on a Credit/No Credit basis.

Special advising and counseling are available by staff and faculty for participants in the General Honors Program. Information on this and other aspects of the General Honors Program may be obtained at the Honors Center.

Students working towards Honors in General Studies are encouraged to undertake Departmental Honors as well.

**The Undergraduate Seminar Program.** Each semester the General Studies Program offers a number of one-credit-hour seminars of general interest usually

unning one third of the semester. These eminars, which do not duplicate lepartmental offerings, are selected by the General Honors Council from proposals ubmitted by faculty members and on ome occasions by persons outside the Jniversity who have special expertise. They are selected for their academic value, general interest, and to enlarge upon ordianary curricular offerings. They are usually interdisciplinary. Classes are imited to no more than 15 students, and emphasis is on discussions and student participation.

Undergraduate Seminars are *open to all undergraduate students.* There are no prerequisite and while these seminars are not Honors Courses, they may be used to fill hour requirements for graduation with Honors in General Studies.

Grading in Undergraduate Seminars is on the A/Credit/No Credit or simply Credit/No Credit basis at the discretion of the instructor.

A list of Undergraduate Seminars for the following semester may be obtained at the Honors Center at the beginning of the preregistration period.

**Departmental Honors Program.**
Departmental Honors program is available to qualified students in many departments of the University and will ultimately be available in nearly all departments. Students should inquire of the chairperson of their major department (or the dean of the college in colleges which are not departmentalized) as to the availability of a program.

The purposes of Departmental Honors programs are as follows: (1) to intensify and deepen the students' knowledge in their major field; (2) to put this specialized knowledge into better relationship with knowledge in related fields and in the larger general area of the students' specializations; (3) to bring the students under closer guidance of, and into closer acquaintance with, teachers in their field.

Normally, students enter a Departmental Honors program in their junior year. They should at least make their intention of graduating with Departmental Honors known to their chairperson or dean early in their junior year. Admission to Departmental Honors candidacy cannot be granted later than the beginning of the student's senior year.

Minimal requirements for graduation with Departmental Honors are as follows: (a) an overall grade-point average of 3.2; (b) not less than 6 credit hours in independent study, senior thesis, or special courses open only to candidates for graduation with honors in the department (or college, if the college is not departmentalized).

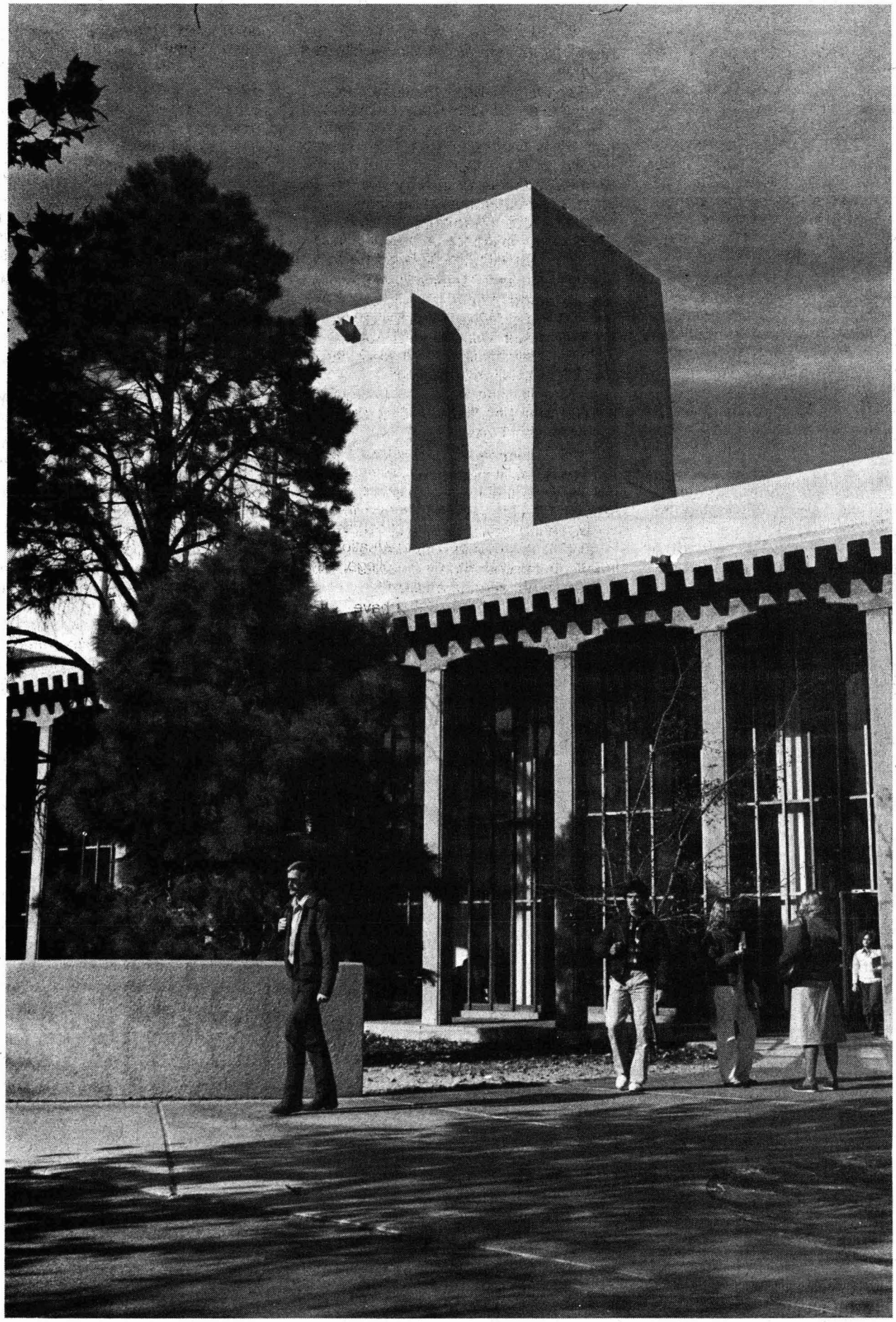
Departments or colleges may have differing additional quantitative and qualitative requirements. The prospective Departmental Honors student should confer with the chairperson of the department (or the dean of the college) regarding the requirements above the minimum requirements set forth just above.

Graduation with Departmental honors will never be a matter solely of performance in standard courses or of grade-point averages in either the field of specialization or the entire program of the student. Continuance in Departmental Honors programs and the level of honors at which the candidates will be graduated are both at the discretion of the department.

**Honors Work and Graduation With Honors**

Students with high academic achievement may graduate with honors at UNM through the General Honors Program (honors in General Studies), departmental honors, or both. The levels of honors designation in both general and departmental honors are: cum laude, magna cum laude, and summa cum laude. In both general and departmental honors, the students become candidates only for honors; the level of honors with which they graduate is determined by the General Honors Council or their department.

Graduation with honors, either general or departmental, is not automatic, and students are required to apply for candidacy. Information regarding application is available from the Honors Center in the Humanities Building or from individual departments.



# UNIVERSITY COLLEGE

THE UNIVERSITY COLLEGE is an academic division of The University of New Mexico that incorporates the University College,the Bachelor of University Studies degree program, the College English Tutorial program, and the Testing Division.

## University College

All freshmen meeting the admission requirements for baccalaureate level work at UNM are admitted to and enrolled in the University College. The fundamental purpose of this college is to provide maximum opportunity for each freshman to prepare to meet admission requirements of that UNM degree-granting college he or she will ultimately plan to enter. Thus, freshmen enrolled in the University College select from among the courses offered by the many academic departments at UNM to discover unanticipated new fields or to pursue an intended academic major, to persevere in a given academic area or deliberately to explore differing academic areas, to change one's academic focus or to bring academic interests into focus. All of these aspects are accomplished with a minimum of restrictions as the student's directions, goals, and commitments are clarified and developed during the freshman semesters.

University College maintains an advisement center and also coordinates the work of the eight other college advisement centers to assist students in their formulation of academic directions, goals, and commitments. The centers are generally open year-round; interested students should call for an appointment to be assured of sufficient time for discussion. The college also provides each new freshman with an individualized Freshman Advisement Resource Sheet. All new UNM undergraduate students are required to meet with an adviser prior to registration for their first semester.

If you are seeking a specific academic major, consider the program of studies recommended by that particular degree-granting college of the University as described in this catalog and in the advisement literature. Consult the advisement center of that particular college.

If you wish to consider several possible areas of study or are unsure of your academic interests, you are encouraged to develop a first-year program of studies that will help you discover those areas in which you have particular interest and competence. The advisement literature suggests several procedures. Seek advisement from the University College advisers.

When you reach sophomore status and meet the specific admission requirements of the degree-granting college you have selected, transfer from University College without delay. If you wish to continue to explore different areas of interest, you may remain in University College through the sophomore year, subject to scholastic regulations of the college.

The staff of University College is available to you throughout the entire calendar year. The Staff Assistants and the Special Advisers are particularly knowledgeable in academic policies and procedures, and possess particular competence in helping with academic problems freshmen encounter. Also, matters of freshman enrollment and retention at UNM, of educational choice, and of the relationships between student aptitude, interests, and academic achievement, have long been of interest and understanding within University College. This information and other services are provided to you whenever you wish to avail yourself of them.

Please be aware that at the University *you are solely responsible for understanding and meeting all requirements for transfer to, and eventual graduation from, whichever degree program you ultimately select.*

The University College office will have information of any new / revised requirements in University College instituted subsequent to the preparation of this issue of the Bulletin (catalog).

**Admission Requirements.** For admission requirements to the University College, see the Admission and Registration section of this catalog. The University College cannot accept students who have attempted 72 or more semester hours or who have earned 64 or more semester hours (see definition next paragraph).

**Continuation in University College.** You cannot be permitted to re-enroll in the University College if at the end of your previous semester or session of enrollment you had attempted a total of 72 or more semester hours. Attempted work, for purposes of University College eligibility, includes all hours of credit you have attempted at this or any other institution of higher learning. Included in this calculation are all incompletes, repetitions, and accepted military credits. The only grade that is excepted from this calculation is "Withdrawal Passing" (W or WP).

Nor will you be eligible to re-enroll in the University College if at the end of your previous semester or session of enrollment you had earned a total of 64 or more semester hours. Earned hours, for purposes of continued eligibility to enroll in University College, are defined as all semester hours of credit recognized in University College whether earned at UNM or at any other institution of higher learning, including hours such as basic university skills course credits, accepted military credits, and CLEP credits.

You may not enroll in the University College after you have been admitted to any baccalaureate degree program at The University of New Mexico.

**Scholastic Regulations.** All who are enrolled in the University College are classified only as freshmen or sophomores. You cannot obtain junior or senior status until you have transferred to a degree-granting college. The most important all-University scholastic regulation that relates to classification is the following:

> Courses numbered in the 100s are those open to freshmen. Courses numbered in the 200s are normally for those of sophomore status, although in some instances freshmen may qualify for them. Courses numbered in the 300s and 400s are for upperclassmen with junior and senior status. These courses **are not** open to freshmen except in **rare** instances. An instructor can disenroll freshman students from courses numbered 200 and above and sophomores from courses numbered 300 and above in appropriate cases.

As a freshman you should be predominantly enrolled for courses at the 100 level. Only when placement scores or previous background warrant would you be enrolled for a 200-level course. The only instances of a freshman receiving permission to take a 300- or 400-level course would be those rare exceptions such as a foreign student coming to the University whose knowledge of his native language exceeds the work offered in the first two years of that language.

For scholastic regulations governing academic probation and suspension, see the General Academic Regulations section of this catalog. Determination of the minimum required scholastic index of a 1.40 or 1.70 is based upon University College **eligibility hours** as defined in the section above.

**Admission to a Degree-Granting College.** The **minimum** requirements for transfer from the University College to any degree-granting college are:

1. Twenty-six hours of earned credit acceptable to that college
2. (a) A scholarship index of at least 2.0 on all hours attempted;

   **or**

   (b) A scholarship index of at least 2.0 on all hours attempted in the previous two semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous two semesters, a scholarship index of at least 2.0 shall be required on all work attempted in as many previous consecutive semesters as are necessary to bring the student's hours attempted to at least 30. (See definition of scholarship index in this catalog.)

**For additional admission requirements of a particular degree-granting college, refer to the admission regulations set forth in the section of this catalog devoted to that college.**

**TRANSFER FROM THE UNIVERSITY COLLEGE.** To transfer from University College into a UNM degree-granting college fill out a petition during a semester (session) in the University College office. You will be transferred at the close of that semester (session) provided you then meet the admission requirements of the UNM college you designated. If you do not meet the requirements, your petition will be invalidated and you would need to re-petition in some future semester (session).

**CERTIFICATE OF COMPLETION.** Upon application to the University College office you will be awarded a University College Certificate if you meet the following requirements: (1) completion of 60 semester hours of acceptable college credit, of which at least 30 hours are University of New mexico credits and 15 of these credits having been earned in University College; and (2) a scholarship index of 1.70 through the semester or session in which the total of college credits earned first becomes 60 or more.

## Bachelor of University Studies

The degree of Bachelor of University Studies is offered by the faculty of The University of New Mexico. This Program, initiated in April 1969, is administered through the University College.

The fundamental purpose of this baccalaureate degree program is to provide the opportunity for individual students to take responsibility for developing unique programs of studies not available through other UNM degree programs. This degree program permits both intercollege and interdepartmental combinations of courses that would be difficult or impossible to obtain if you were meeting the specific requirements of any particular undergraduate degree college program. Also, you may structure a program of studies so that the sequence and combination of courses reflect either a specialized or a broad pattern of educational experience, depending upon your preference. This Program is not intended for the undecided student. It may not be used for a second undergraduate degree.

Strict compliance with degree program scholarship requirements is mandatory for entrance and continuation in the Program. An entry advisement interview is required. This interview is not utilized to restrict entrance to the Program. Rather, you will have an opportunity to review your educational plans and strategies in light of the Program requirements. The advisement of students is provided by the Special Advisers of University College.

Students in the Bachelor of University Studies Program must meet the general academic regulations of this University specified for all baccalaureate degree programs. If you have questions regarding any aspect of the Program, please address them to the Bachelor of University Studies Program, University College. The University College office has information about any new / revised requirements in the Program that have become effective subsequent to the preparation of this issue of the Bulletin (catalog).

**Admission.** All freshmen students are admitted to the University College. A detailed statement of entrance requirements is contained in the Admission and Registration section of this catalog.

**Admission from University College.** Requirements for transfer from the University College into the Bachelor of University Studies program are as follows:

1. Twenty-six hours of earned credit acceptable to this program.
   (Note: these 26 hours cannot include credit in Mathematics 100, Natural Science 100 courses, Social Science 100 courses, nor credits in English 100 or Mathematics 120 earned Fall 1979 or later.)
2. (a) A scholarship index of at least 2.0 on all hours attempted

   **or**

   (b) A scholarship index of at least 2.0 on all hours attempted in the previous two semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous two semesters, a scholarship index of at least 2.0 shall be required on all work attempted in as many previous consecutive semesters as are necessary to bring the student's total hours attempted to at least 3 (See definition of scholarship index in this catalog).
3. An entry advisement interview prior to transfer.
4. Demonstrated competence in the writing of English as evidenced by one of the following:
   (a) A passing score on the Communication Skills Test administered by the English Department.
   (b) A score of 25 or better on the English portion of the ACT.
   (c) A score of 552 or better on the verbal portion of the SAT.
   (d) A score of 55 or better on the College Composition Test of the CLEP.
   (e) A passing score on the Michigan test (for Foreign students only).
   (f) A grade of "C" or better in English 102 earned at UNM beginning with the Fall semester 1980.

**Transfer from Other Colleges in this University.** Transfer to the Bachelor of University Studies Program from a

gree-granting college of The University of New Mexico requires a scholarship index of 2.0, the entry advisement interview, and fulfillment of the English competency requirement. To transfer begin the process in the office of the college in which you are presently registered.

**Transfer from Other Accredited Institutions.** If you seek transfer into the Program from another accredited institution, you must meet the University's general qualitative admission requirements for transfer and also present a minimum of 26 transferable semester hours of credit acceptable to this Program. Acceptable transfer credits will be reduced if credits are subsequently earned in comparable UNM courses. Also, note that transfer work is not computed in the determination of the UNM scholarship index. The required entry advisement interview must be held no later than the end of the fourth week of the initial semester in the Program; the English competency requirement must be met within time limits specified by the college.

**Degree Requirements.** If you plan to graduate at the close of a given semester, you must make application for the degree with the Bachelor of University Studies Staff Assistant in the University College office by the end of the fourth week of that semester; you are encouraged to make such application during the semester preceding that in which you intend to complete degree requirements. A summary specifying the work remaining for the degree will be prepared and sent to you; however, you are solely responsible for completing all the requirements for graduation. Be aware that no academic dividends or penalties are given in the Bachelor of University Studies Program. No credit is recognized for Mathematics 100, Natural Science 100 courses, Social Science 100 courses, nor for credits in English 100 or Mathematics 120 earned Fall 1979 or later.

The specific graduation requirements are:

1. A minimum of 128 semester hours of earned credit. This may include up to four hours of physical education activity courses, or, up to eight hours of PE 188 (Therapeutic Physical Education).
2. A minimum scholarship index of 2.0 on all work attempted at The University of New Mexico.
3. A minimum of 50 semester hours earned in courses at the upper division level. (300 level or higher.)
4. A minimum grade-point average of 2.0 on all upper division course work attempted at The University of New Mexico.
5. Subsequent to admission to the B.U.S. Program, a minimum of two complete semesters of enrollment for UNM residence credit. These semesters in the B.U.S. Program must be the last two semesters of attendance at UNM.
6. A minimum of six semester hours of academic work earned while enrolled in the Bachelor of University Studies Program.
7. Fulfillment of the residence credit requirement of this University.

## Two-Year Secretarial Program

In recognition of the increasing demand for trained office personnel, this program is designed to give students not only the basic knowledge and skills necessary for initial employment, but also a solid background in the liberal arts. In recent years greater appreciation of the value of well-planned and well-directed office services has opened an attractive field of employment for college-trained men and women. Those who choose this curriculum are able to advance more rapidly toward positions requiring management and supervisory responsibility. Students interested in this Program should consult a Business Education Department adviser. (See also the "A.A. Degree in Secretarial Studies and Office Supervision" under the Department of Secondary and Adult Teacher Education.)

**Curriculum**

**First Year**

First Semester

| | |
|---|---|
| Engl 101 Wrtg w / Rdgs in Expos | 3 |
| Bus Ed 112 Interm Typing | 3 |
| Bus Ed 113 Shorthand Theory | 3 |
| Sp Com 101 or 130 Intro to Spch or Pub Spkg | 3 |
| Elective | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| Engl 102 Analytic Writing | 3 |
| Hist 101 or 102 Western Civ | 3 |
| Bus Ed 114 Shorthand Dictation | 3 |
| Bus Ed 262 Adv Typing | 3 |
| Elective | 3 |
| | 15 |

**Second Year**

First Semester

| | |
|---|---|
| Bus Ed 117 Off Mach & Filing | 2 |
| Econ 200 or 201 Prin and Probs; Prin | 3 |
| Bus Ed 253 Shorthand Trans | 3 |
| Accounting (see adviser) | 3 |
| Electives (see adviser) | 4 |
| | 15 |

Second Semester

| | |
|---|---|
| Bus Ed 257 Secretarial Admin | 3 |
| Bus Ed 265 Bus Communications | 3 |
| Mgt 201 Intro to Data Proc | 3 |
| Bus Ed 350 Voc Off Lab and / or Electives | 6 |
| | 15 |

Electives should be taken from the following areas in consultation with the student's major adviser:

English, mathematics, psychology, geology, fine arts, political science, sociology, data processing

A student who has had previous instruction in shorthand and typewriting should talk with advisers in Business Education about waiving Bus Ed 112, 113, and 114 and arranging a proper sequence of courses in the secretarial administration area. This arrangement would enable the student to select 9 or more hours from the list of electives Up to 2 hours in nonprofessional physical educatio courses may be taken for credit.

## The College English Tutorial Program

This English 100, 101 option provides a special service t those who need extra help with college English and stud skills. It is especially recommended for those students wh score 14 or below on the ACT English examination, or fo those who speak English as a second language or Colleg English as a second dialect. (English 101 is offered only fo students whose second language is English.) Classes ar composed of only fifteen students, meet five hours a week, and give full credit (3 hours each). Special sections fo foreign students and for speakers of English as a second language are provided. Admission is voluntary, but the number admitted is limited.

For information, contact the College English Tutorial Program, Marron Hall, Room 214, or telephone the secretary, 277-5426. Applications should be submitted early. Registration is by instructor permission only.

**Intensive English Institute.** The Intensive English Institute offers full-time English language classes (noncredit) for students planning to attend an American university. Student visas may be obtained for the program. A Certificate of Attendance or Certificate of Completion is awarded. Classes are offered in summer, fall and spring according to the regular university schedule. Inquiries should be made at the Office of International Programs and Services.

## Testing Division

The Testing Division is located in the Student Health Center and University College Building. The Division coordinates testing which is required by the University and administers individual tests on a referral basis from University agencies, including the Student Mental Health Team. The Division also serves as a center for national testing programs which include the American College Tests (ACT), the College Level Examination Program (CLEP), the Graduate Management Admission Test (GMAT), the Graduate Record Examination (GRE), the Law School Admission Test (LSAT), the Medical College Admission Test (MCAT), the General Educational Development Test (GED), and numerous others. Information concerning these programs may be obtained from the Division.

In addition to testing services, the Division performs institutional research related to the testing programs and to student performance. The Division also provides consulting services to UNM faculty and staff in the area of measurement and evaluation. By special arrangement, Division personnel are available to assist non-UNM institutions or agencies with problems related to the use of tests. A test and evaluation library which contains tests published in the areas of intelligence, achievement, aptitude, interest, and personality as well as standard evaluation tests is available to qualified faculty, staff, and nonstudents.

# SCHOOL OF ARCHITECTURE AND PLANNING

THERE IS growing concern with the influence of the built environment on the quality of life. Societal responses will be wide ranging in scope and continuously changing. People capable of meeting the challenges of the future will be needed.

The fields of architecture, planning, and environmental design offer a significant share of the knowledge and skills necessary to work in the complex relationships between people and the built environment.

## Educational Objective

For *undergraduates*, the School offers either a preprofessional program or a way to become generally educated by focusing on the processes by which we design and build our environment. The *graduate* program offers an accredited professional degree in architecture and a professional degree in community and regional planning.

The curriculum of the School is designed to help provide students with the ability to learn to analyze and to synthesize. It provides methodologies and concepts which will enable them to address the complexities of social values, historical context, political, economic, psychological, cultural, and technological factors in order to positively affect the built environment.

## Admission Procedures: Undergraduate

All incoming freshman students are required to enroll in University College. Upon completion of 26 credit hours, students may apply for transfer and acceptance into the School of Architecture and Planning. Applications are accepted from any college within the University (including University College), as well as transfers from any other accredited universities approved by the Office of Admissions & Records. Requirements for application are as follows:

1. Completion of a minimum of 26 credit hours at an accredited college.
2. A scholarship index of at least 2.5 on all credit hours.
3. Demonstration of competency in English by receiving a score of 20 or higher on the American College Tests (ACT) or its equivalent.
4. A grade of B or better in the 104 (Introduction to Design), or a demonstration of comparable ability. In addition, a grade of B or better in Arch 101, CRP 165 or CRP 181.
5. Submission of a letter of intent, indicating which of the three program emphases (architecture, planning, environmental design) is of most interest, and a description of current life goals and how an architectural education might implement those goals.
6. Two letters of recommendation (at least one academic recommendation is preferred.)
7. A personal interview with the School's Committee on Admissions.
8. Submission of all material by March 1 for fall semester admission.

Transfer students from other institutions must meet the general qualitative admissions requirements for transfers established by the University and meet all requirements established by the School of Architecture and Planning. Transfer students may be admitted in spring semester, with application materials due by November 1.

For further information, please write: Admissions School of Architecture and Planning, 2414 Central Ave. SE, Albuquerque, New Mexico 87131. Telephone: 277-2903.

## Graduation Requirements

Each student must satisfy all general University requirements.

1. Of the 128 hours required, 40 hours must be in courses numbered 300 or above; no more than 4 hours of physical education courses may be included.
2. Each student in the School must take the Communications Skills Test administered by the English Department. Failure to pass this examination by the end of the sophomore year will result in an automatic probationary status. A grade of C or better in English 101 and 102 can substitute for passing the CST.
3. A student whose grades fall below 2.5 in architecture and / or overall will automatically be placed on School probation; thereafter, the faculty reserves the right to disenroll that student from the School of Architecture and Planning. Students who plan to enter the Graduate Program for the professional study of architecture, planning, or environmental design must graduate with a 3.0 overall average in order to be considered for admission to graduate study.

*The School offers two options under separate degree titles for Undergraduates with different educational objectives.*

**Bachelor of Arts in Architecture.** For the student who is primarily interested in architectural design, this emphasis allows concentration in the esthetic, social, programmatic, structural, management, or research aspects of building design and construction. Instruction often uses case studies of a variety of building types in projects which simulate the conditions met in architectural practice and research. Emphasis is placed on methods, process, and the development of a product—be it a building design or a research document. This is a "pre-professional" degree, requiring successful completion of a 74-hour core curriculum. It prepares the student for entry to the graduate (professional) level program at this School or any other similarly accredited school.

Upon graduation, a student should qualify for entry-level professional work and in some states, including New Mexico, have the degree count toward the prerequisites for registration as a practicing architect. Beginning in 1984 the National Council of Architectural Registration Boards will require an accredited first professional degree in architecture for national certification. At UNM this is the Master of Architecture.

**Bachelor of Arts in Environmental Design.** This degree can best be described as a generic one for those students who wish to concentrate their education in the realm of knowledge about the built environment, problem solving as a way of thinking and the design process, without the rigors of the preprofessional curriculum in architecture. A 50-credit hour core curriculum is required. Students may continue their study or work in such related fields as community and regional planning, interior design, landscape architecture, construction, environmental analyses, and many others.

Upon graduation with either degree, a student should: 1) be able to work effectively on environmental design problems without the real-world constraints of our changing society, 2) be able to formulate concepts of better environments beyond present-day constraints, and understand how such needed changes may be brought about, and 3) have the widest possible array of career choices known and accessible.

**The Master of Architecture.** This is the first professional degree in architecture. It is granted upon completion of a 48-credit-hour graduate program which allows students to specialize in a specific field or generally to broaden their previous education, so that they can practice as professionals or pursue interests through research and postgraduate study.

**The Master of Community and Regional Planning.** This is a two-year, 48 credit hour, professional degree in the field of planning. The program's objective is to train planners capable of practicing in rural, small town, and urban settings. Regional problems provide a focus for the program. Students have options to specialize in various sub-areas of planning, such as land use, economic development, environmental analysis, and social programming.

**Special Qualities offered by the School**

1. A multidisciplinary education adaptable to individual interest, abilities and motivation through selection of electives.
2. A regional orientation dealing with architectural, planning, and environmental issues of the Southwest as a way of learning fundamental concepts and methodologies.
3. Applied research and public service to the state of New Mexico.
4. A commitment to questions of appropriate and ethical professional practice.

**Opportunity for Emphases.** Within the constraints of the required Architectural or Environmental Design curricula for undergraduates, these emphases may be developed in a course of study at both the graduate and undergraduate level:

*Community and Regional Planning*: A course of study appropriate for those students who are interested in the short run management of urban systems and rural resources. The major activity of the profession is the development and implementation of plans. The emphasis areas include: local community development process; facility planning; regional land use and rural environmental planning.

*Design and Behavior.* Emphasizes the study of the physiological and psychological factors which should influence decisions about the built environment and how people use it.

*Environmental Analyses*. This emphasis consists of a set of courses which develop theory and methods of evaluating the impact of alternative development decisions on the quality of air, water, land, and societies.

*Solar and Appropriate Technologies*. The School's concern in solar design and appropriate technology is only a part of larger concerns for the conservation design and environmental: a commitment to making students aware of engery conservation design and environmental issues. At present the department offers a variety of courses, seminars, and lectures, such as:

1. Building energy systems—dealing with heat gain and heat loss, mechanical and passive means of energy conservation and environmental comfort.
2. Appropriate technology—an exploration of ways and means of matching sources to problem situations.
3. Solar design—the special effects on buildings.
4. Environmental problems and analyses—the impacts of development alternatives on natural conditions.
5. Design with environment—ways to use natural forces natural forces in solving development objectives.

Related courses are also available in other departments (e.g., engineering, geography, and geology).

## Curricula

The curriculum is designed to achieve two basic educational objectives. The first of these is to offer sufficient breadth of subject area to define the fields of architecture, planning and environmental design and to give students an awareness of the many facets involved through an introductory course. The core of courses required for graduation reflects the faculty's judgment as to the appropriate breadth o study in each degree program.

The second objective is to allow students armed with this awareness the opportunity to pursue selected areas of interest to greater degrees of depth, i.e., to cycle from introductory courses to advanced courses, seminars or independen study (problems).

The required core for the architecture program goes beyon introductory courses in the area of design studios an technology, reflecting the "pre-professional" nature of thi degree and the presumed expectations of performance upo graduation.

**Bachelor of Arts in Architecture Core Courses Required***

GENERAL

Arch 101 Intro to Arch
Arch 104 Intro to Design Skills
CRP 165 Intro to the City
or
CRP 265 Commun Planning Concepts
CRP 181 Intro to Environmentl Prob
or
CRP 281 Intro to Environ Impact Review
Arch 271 Intro Design & Behav
Arch 357 Intro to Landscape Arch
Arch 365 Urban Design Concepts & Math.
Arch 373 Programming for Design

Subtotal

TECHNOLOGY

211 Intro to Structural Engr (or CE 202)
CE 312 Arch Structures
Arch 285 Building Tech 1
Arch 385 Building Tech 11
Arch 485 Working Drawings

Subtotal

* Students in either program may vary from these requ cores with the written approval of a faculty adviser.

| | |
|---|---|
| STUDIOS | |
| Arch 201 Design Studio I | 4 |
| Arch 202 Design Studio II | 4 |
| Arch 301 Design Studio III | 4 |
| Arch 302 Design Studio IV | 4 |
| Arch 401 Design Studio V | |
| or | |
| Arch 498 DPAC | 6 |
| Subtotal | 20 |
| *Architecture History* | |
| Elect 6 credits of Arch Hist | |
| Subtotal | 6 |
| Required electives in architecture and planning | 8 |
| Total credits required in major | 74 |
| **Other electives | 54 |

30 credits must be in the College of Arts and Sciences, including Math 162 or 180 (3 credits); 6 credits must be in art studio; 3 credits in physics.

## Bachelor of Environmental Design Core Courses Required

| | |
|---|---|
| Arch 101 Intro to Arch | 3 |
| Arch 104 Intro to Design Skills | 3 |
| CRP 165 Intro to the City | |
| or | |
| CRP 265 Commun Planning Concepts | 3 |
| CPR 181 Intro to Environmentl Prob | |
| or | |
| CRP 281 Environmntal Impact Review | 3 |
| Arch 201 Design Studio I | 4 |
| Arch 202 Design Studio II | 4 |
| Elect 3 hours of Arch History | 3 |
| Arch 271 Intro to Design and Behav | 3 |
| Arch 357 Intro to Landscape Arch | 3 |
| Arch 365 Urban Design Concept & Math | 3 |
| Arch 373 Programming for Design | 3 |
| Total credits | 35 |
| Required electives in architecture and planning | 15 |
| Total credits required in major | 50 |
| **Other electives | 78 |

Of these, 30 credits must be in the College of Arts and Sciences, including 3 credits in math (above, but not including Math 121) and 3 credits in physics; 6 credits must be in art studio. Each student is required to concentrate 21 of the elective credits in one department other than the School of Architecture and Planning.

**Suggested Introductory Courses:** Arch 101, 104†, CRP 165, 181; Math 150, 162, or 180; Physics 102 or 160; Art 102, 121, 122, 142; Engl 101, 102; Psych 102; Soc 101, 102.

## THE PROGRAM COMPONENTS

**Design Studios.** Open only to majors, the studio is the essential setting for the integration of all other relevant learning employed in the design process. Studios such as Arch 201, 202, 301, 302, etc, must be taken in sequence according to one's level of demonstrated ability, regardless of scholastic standing.

**Lectures and Seminars.** While seminars may change each semester according to demand and student-faculty interest, lecture courses are organized to offer a sequential complementary learning opportunity.

**Problems.** Listed as Arch 429. Individual instruction for 1-3 credits with a faculty member. Problems offer the opportunity for students to engage in independent study or to develop special skills. Faculty approval is required.

**Design and Planning Assistance Center (DPAC).** Listed as Arch 498. Through the Design and Planning Assistance Center, (DPAC)School provides architectural and planning services to individuals and groups in New Mexico who have inadequate financial resources to obtain services from practicing professionals. The program provides a clinical learning opportunity for students to work on real problems in communities under faculty supervision.

**Center for Environmental Research and Development.** Environmental issues of the Southwest are being studied by faculty members, often with the assistance of students. Conservation of energy, solar heating and cooling, water, planning, land use, environmental impact in semiarid climates, and behavioral impacts of the natural and built environment are among the typical subjects of a study.

**Institute for Environmental Education.** Knowledge of human growth and development needs are emphasized as they apply to the process of designing optimal environments for learning and living. The institute engages in research and graduate training of resource personnel to assist public schools and institutions in raising the levels of awareness, understanding, and knowledge of the interrelationships between design and behavior and between people and their physical environment.

**Licensing for Architects in the State of New Mexico.** Graduates of the architectural program with the Master of Architecture are required to have three years of approved architectural work experience to become eligible to take the design and site planning portion of the equivalency exam and the professional exam. Graduates with the Bachelor of Arts in Architecture are required to have four years of approved experience and to take the entire equivalency exam and the professional exam for certification.

**Licensing for Planners.** There are no licensing requirements for planners in the State of New Mexico. Planners can be certified through the American Institute for Certified Planners (AICP).

** Courses taken in the General Honors Program of the Undergraduate Seminar Program will be accepted as elective in either program

† Prerequisite for Arch 201 and acceptance into the School. Previous experience in graphic artistic expression and elements of drafting will benefit all entering students.

# COLLEGE OF ARTS AND SCIENCES

THE COLLEGE OF ARTS AND SCIENCES offers bachelor of arts and bachelor of science degrees in a variety of subjects that relate to humanity's cultural, social, and scientific achievements. Although the fields of study offered by the departments in the College underlie the more specialized work of graduate and professional schools, most of the degree programs are not designed as vocational ends, but rather as the means for understanding society's condition, achievements, and problems. Students obtaining a degree from Arts and Sciences should have a broad understanding of the world in which they live and should be able to think logically and express themselves clearly. Consequently, the College requires a preparation based on the offerings of several departments.

## Academic Advisement and Requirements for Admission

Freshmen enrolled in University College and new transfer students who intend to major in the College of Arts and Sciences should visit the College Advisement Center before registering for classes. The Center is located in Ortega 201 and advisers are available during regular University hours. Appointments are not needed.

**Requirements for Admission from University College**

1. Twenty-six hours of earned credit; 23 of these hours must be acceptable toward graduation.
2. (a) A cumulative grade-point average of at least 2.0 on all hours attempted; or
   (b) A cumulative grade-point average of 2.0 on the last 30 hours.
   (c) Any exceptions to the above must be approved by the Dean of Arts and Sciences.
3. Demonstrated competence in the writing of English as evidenced by one of the following:
   (a) A passing score on the Communications Skills test administered by the English Department.
   (b) A score of 25 or better on the English portion the ACT.
   (c) A score of 552 or better on the verbal portion of the SAT.
   (d) A score of 55 or better on the English Composition Test of the CLEP.
   (e) A passing score on the Michigan Test (for foreign students only).
   (f) Completion of English 102 with a grade of C or higher.
4. Students planning to major in a department of the College of Arts and Sciences should apply to University College for transfer as soon as they have met the requirements listed above.

## Transfer from Other Colleges in the University and from Non-Degree

1. A cumulative GPA of at least 2.0 on all work attempted.
2. Demonstrated competence in the writing of English as evidenced by one of the methods indicated above.
3. Students should apply to the college of their current enrollment for transfer to the College of Arts and Sciences.

## Transfer from Other Accredited Universities

1. A minimum of 26 hours, 23 must be in courses acceptable to Arts and Sciences.
2. Demonstrated competence in the writing of English (see above).

**Communications Skills Test**

Transfer students and readmits who have not demonstrated competence in writing of English may be admitted with the Dean's approval to the College of Arts and Sciences on a *provisional basis*. At the end of the one-semester, students who have not passed the Communications Skills Test or completed English 102 with a grade of C or higher will be ineligible to reenroll in the College of Arts and Sciences.

**CLEP and ACT**

The College of Arts and Sciences accepts credit earned through the general *CLEP* and the *ACT* only as elective credit not as credit toward fulfillment of major, minor or group requirements. Six hours of **subject** CLEP may be used to fulfill group requirements and toward elective credit, but not in the major or minor.

## Graduation Requirements

A degree from the College of Arts and Sciences is designed to give students a relatively broad background while allowing concentrated study in two disciplines. This is accomplished through group requirements, the selection of a major and minor, and the opportunity to select electives.

Students declare a major and minor upon completion of 90 hours. This is done by submitting a degree application to the College office. The degree application must be filed no later than midterm of the semester in which the student intends to graduate. A list of courses required for graduation is then sent to the student. *The student is solely responsible for being familiar with and completing all graduation requirements.*

A degree from the College of Arts and Sciences is awarded upon completion or accomplishment of the following:

1. A minimum of 96 hours of courses taught by Arts and Sciences departments. Exceptions are allowed for majors in home economics (88 hours) and art (92 hours)
2. A total of 128 acceptable hours.
3. A grade-point average of at least 2.0 on all college-level work attempted or at least a 2.0 on the last 128 semester hours. Grades of F or WF are not credited toward graduation but are included in the grade-point average.
4. 40 hours of courses numbered 300 or above with at least a 2.0 average on all hours attempted.
5. A major and minor or a double major.
6. Group requirements as described below.
7. Demonstration of competence in the writing of English.
8. Subsequent to admission to the College of Arts and Sciences, one semester of resident enrollment.
9. A minimum of six (6) semester hours of courses taught by Arts and Sciences departments while enrolled in the College of Arts and Sciences. **Students who have not been in continuous attendance must follow the requirements of the current catalog upon reenrollment.**

## Group Requirements

The purposes of the following group requirements are to ensure that students will explore various fields of knowledge before beginning to concentrate too heavily in their major fields and to provide a broad base in several areas necessary to a well-rounded general education. University Skills (100) courses are not acceptable.

To fulfill the group requirements students must complete SEVEN of the following eight groups:

I. **Communications:** 9 credit hours (not more than 6 from any one area) in English **writing,** speech communication, linguistics, or journalism. (Engl 100 is not acceptable.)

II. **Humanities:** 9 credit hours (not more than 6 from any one area) in literature, including English, American, foreign and comparative literature, history, philosophy, or approved courses in American Studies.

III. **Biological/Behavioral Sciences:** 6 / 7 credit hours in anthropology, biology, or psychology.

IV. **Physical Sciences:** 6 / 7 credit hours in chemistry, geology, or physics / astronomy.

V. **Mathematics:** 6 credit hours. Math 111, 112, and 120 may not be used to satisfy this requirement.

VI. **Social Sciences:** 9 credit hours (not more than 6 in any one area) economics, geography, political science, or sociology (not acceptable are Political Science 250, 309, 350, 352, 465, 478, and 499 and Sociology 280, 281, 338, 478, 480, 481L, 490, and 499).

VII. **Foreign Language:** As many credit hours as needed to complete the fourth semester of a language. Satisfaction of this group requirement can be established through testing. Students with prior exposure to a foreign language should consult with the Department of Modern and Classical Languages for advisement and placement. Satisfaction of this group requirement can be met by completion of one of the following courses or by passing the challenge examination for one of these course: French 202, 276, German 202, 276, Navajo 202, Greek 302, Italian 276, Latin 202, 352, Portugese 276, Russian 202, Spanish 202, 212, or 276, Swahili 202, Chinese 202.

VIII. **Fine Arts:** 6 credit hours. Acceptable are selected courses in the history, appreciation, and criticism of art, music, theatre, and dance. Not acceptable for this group are all other courses in studio, design, dance, applied music, music theory, or ear training.

## Additional Information

1. At least one credit hour of a laboratory in one of the sciences (Group III or IV) is required.
2. No single course may be applied to more than one group.
3. Course work done at other schools or in another UNM college may apply but requires the approval of the Dean of Arts and Sciences.
4. Courses taken in the General Honors or Undergraduate Seminar Programs may, with the prior approval of the Dean, be counted toward the group requirements in groups for which course content is clearly appropriate. The question of appropriateness will be determined by the Dean in each case.
5. These group requirements are effective for all students entering the University in the summer of 1977 and thereafter. Other students may complete their degrees under either the old or new group requirements as they prefer.

**Major and Minor Studies.** Upon completion of 90 hours, students shall declare (1) a major and a minor subject, or (2) two major subjects, or (3) one of the special curricula of the College. After declaring these, the program of studies must meet the approval of the chairperson of the major department or the supervisor of the special curriculum. Students may not elect **both a major** and a **minor** outside the College.

Only work of C quality or better is accepted for the major and minor. CR (credit) grades are not accepted in the major or minor unless they are courses specifically carrying only CR / NC grades. No more than 24 CR grade hours are acceptable toward a degree over and above the specifically designed CR courses.

Grades of D are not acceptable in the major or minor but may be used as elective hours counting toward the 128 required for graduation.

A major department may specify in lieu of a specific minor a **distributed** minor in courses in related departments. A distributed minor shall consist of not less than 30 semester hours nor more than 36 hours. A student should consult with the major department chairperson if a distributed minor is desired.

The same courses may not be used to fulfill both major and minor requirements. If the same course(s) are required for both major and minor or for both majors in the case of double majors, an equivalent number of approved hours shall be added to the total combined hours required. Contact the college office for further information.

**Double Degree in the College of Arts and Sciences.** Students wishing to pursue a second baccalaureate degree will need to complete a minimum of 30 hours in addition to those required for the first degree and must choose majors and minors different from the first degree. The minor used for the first degree may be raised to a major, but the first major may not be used as the minor for the second degree in no case can a student receive two Bachelor of Arts or two Bachelor of Science degrees unless one has been earned from a different university.

**Certification to Teach in High School.** Students in Arts and Sciences who wish to acquire certification as a secondary school teacher should confer with appropriate people in the College of Education regarding suitable majors and minors and necessary education courses.

**Cooperative Education Program.** The College of Arts and Sciences offers a cooperative education program (Co-op) for students majoring in some departments in the college. The Co-op curriculum is a work-study program which alternates a semester or a year of full-time academic study with a semester or year of full-time employment. Co-op students gain employment experience in major subject-related areas which provides career guidance and makes their academic study more meaningful. Also, Co-op students earn a substantial part of their educational expenses.

Students who are interested in the Co-op Program should contact the Co-op Director soon after being admitted to the University. Co-op students normally must finish the first semester of the freshman year with at least a 2.5 grade average before beginning interviews for a Co-op job. Thus, Co-op students normally begin their first work phase at the end of the freshman year at the earliest.

While on each work phase, Co-op students must register in a special Arts and Sciences course, Cooperative Education Work Phase, and pay a $20 fee. This registration maintains the students' academic status, including eligibility for dormitories, activity cards, library privileges and insurance. After completing each work phase, Co-op students register in one of their major department special courses. Evaluation of Co-op Work Phase, for 1-6 credit hours. A maximum of six hours of academic credit earned from the Co-op work phase may be counted only as elective credit toward the degree and **not** toward the major, minor or group requirements.

**Combined Curricula.** Degrees from both Arts and Sciences and the College of Engineering may be obtained upon completion of a five-year program as approved by the dean of each college. Interested students should consult with each dean before the end of their sophomore year.

A combined program in the College of Arts and Sciences and the Anderson School of Management allows for a bachelor's and master's degree upon completion of a five-year program. This "Three-Two" M.B.A. proposal allows students to complete Arts and Sciences group requirements and majors in the first three years, the Mgt minor in the fourth year, and the M.B.A. in the fifth year. Requirements for the Mgt minor and M.B.A. are outlined in the Anderson Schools of Management section of this catalog.

**Courses for which Credit toward a Degree is not given.** Except as specified below, the College of Arts and Sciences does not count toward a degree practicum or activity courses offered in other colleges such as typing, shorthand, PE, shop work; courses that are primarily vocational or directed toward professional practice; courses taken in a school of law or medicine to be used for degrees in law or medicine or University Skills (100) courses. Students may enroll in any of these courses in pursuit of their own interests. See the College office for detail on courses that are not counted toward a degree.

Credit will be given toward a degree:

1. for ensemble music or dance, up to 4 hours, separately or in combination.
2. for courses in methods of high school teaching, provided these courses are required for certification in a single or composite field, up to 12 hours.
3. for USP courses that are approved for credit by the College of Arts and Sciences, up to 4 hours.

**Freshman-Sophomore Programs.** Students enrolled as freshmen in University College normally take only courses numbered 100-199. Courses numbered 200-299 are open to sophomores. Courses numbered 300 or above are not open to freshmen, unless the student has the permission of the instructor, the chairperson of the department; and the dean of the college.

**Departments or Programs of Instruciton.** A student may not elect both a major and minor outside the college.

| Major in A&S | Minor in A&S |
|---|---|
| American Studies | American Studies |
| Anthropology (BA) | Anthropology |
| | Asian Studies |
| Astro-Physics(BS) | Astro-Physics |
| Biology (BS) | Biology |
| Chemistry (BA or BS) | Chemistry |
| | Distributed |
| Classics (BA) | |
| Communicative Disorders (BA) | Communicative Disorders |
| Comparative Literature (BA) | Comparative Literature |
| Creative Writing (BA) | |
| Economics (BA) | Economics |
| Economics-Philosophy (BA) | |
| English (BA) | English |
| English-Philosophy (BA) | European Studies |
| Geography (BA) | Geography |
| Geology (BA or BS) | Geology |
| History (BA) | History |
| Individual | |
| Interdisciplinary (BA or BS) | |
| Journalism (BA) | Journalism |
| Latin American Studies (BA) | Latin American Studies |
| Languages (BAs): | |
| French | French |
| German | German |
| | Greek |
| | Latin |
| Portuguese | Portuguese |
| | Russian |
| Spanish | Spanish |
| Linguistics (BA) | Linguistics |
| Mathematics (BS) | Mathematics |
| | Paleoecology |
| Philosophy (BA) | Philosophy |
| Physics (BS) | Physics |
| Political Science (BA) | Political Science |
| Psychology (BA or BS) | Psychology |
| Religious Studies (BA) | Religious Studies |
| Russian Studies (BA) | Russian Studies |
| Sociology (BA) | Sociology |
| | Social Welfare |
| Speech Communication (BA) | Speech Communication |

## Other Programs

The majors and minors listed below are not programs in the College of Arts and Sciences. However, a student may elect to take either a major or minor, but not both, from the following programs outside the College of Arts and Sciences.

| Major | Minor |
|---|---|
| Art (BA) | Art |
| | Management |
| | Computing Science |
| | Electrical Engineering |
| Home Economics (BA) | Home Economics |
| | Library Science |
| | Mechanical Engineering |
| | Music |
| | Naval Science |
| | Special Education |
| | Theatre Arts (Drama) |

Major and minor requirements and course descriptions will be found listed by departments.

**Preprofesisonal and other Curricula**

Students are cautioned against assuming that four-year college courses prepare them for professional work. At least one year of specialized graduate work is advisable in many fields, even if not actually required.

Students who plan to study law will normally complete a degree in the College of Arts and Sciences before gaining admittance to a law school.

Preprofessional advisement is the responsibility of the Arts and Sciences Advisement Center where students will be advised and/or referred to an appropriate faculty adviser.

**Curriculum preparatory to Medicine**

Specific requirements for admission to medical schools in the United States and Canada are included in a volume published by the Association of American Medical Colleges and is titled, *Medical School Admission Requirements, U.S.A. and Canada*. Interested students should consult this volume.

**Curriculum preparatory to Dentistry**

Specific requirements for admission to dental schools in the United States and Canada can be obtained by writing to the individual schools. Lists of the schools and their addresses can be obtained by contacting Dental Programs or by writing to the American Dental Association, 211 East Chicago Avenue, Chicago, Illinois 60611.

# COLLEGE OF EDUCATION

THE COLLEGE OF EDUCATION is involved in teaching, research and service in areas relating to education and human development with a strong commitment to multi-cultural education. The college is involved in training and certification programs for educational personnel at all levels from from infancy through adult and higher education, as well as the preparation of personnel for a wide variety of other human service careers. Faculty and students engage in educational and behavioral research. The college also provides courses, inservice training and consulting services to other departments within the University and to professionals, laypersons, agencies, and institutions here and abroad.

## Accreditation and Certification

The University of New Mexico is fully accredited by the National Council for the Accreditation of Teacher Education (NCATE) and the State Department of Education. Graduates from College of Education undergraduate programs are eligible to apply for and receive a four-year certificate to teach in New Mexico. This certificate may be renewed only once for an additional four-years. Forms for application for the four-year certificate and additional information about the certificate are available from the Office of the Assistant Dean for Student Affairs in the College of Education.

Certification may also be obtained in the areas of special education, guidance and counseling, school administration, teaching English as a second language, bilingual education, early childhood education, and reading specialist. Most of these programs require graduate work. For further information about any of the special certificates, or others, consult the appropriate departments in the College of Education.

## Degree Programs

The College of Education offers a limited number of programs leading to a degree called Associates of Arts in Education. These are two-year programs and enrollment is limited to participants in special projects, except for the A.A. in Secretarial Studies and Office Supervision. Further information about available associate of arts programs may be obtained from the Office of the Assistant Dean for Student Affairs. Most undergraduate programs offered in the College of Education lead to a bachelor's degree and certification as a teacher. Some programs, such as recreation and dietetics, while leading to a bachelor's degree, do not also lead to teacher certification. The minor in special education leads to certification at the M.A. level. In later sections of this bulletin, curricula for all bachelor's degree programs are described. The College of Education offers, through the Office of Graduate Studies, programs leading to the Master of Arts degree, the Doctor of Philosophy degree, and the Doctor of Education degree. Graduate programs leading to the Certificate of Education Specialist (sixth-year graduate programs) are also available in some departments. Consult the current Graduate Programs Bulletin and appropriate departments for details about these programs.

## Counseling and Advisement for Students

Students considering teaching as a career or those planning to enter any field offered by the College of Education should contact the Office of the Assistant Dean for Student Affairs when they begin their studies. Counseling and advisement will be provided to clarify course selections and insure proper planning. Upon formal transfer to the College a permanent adviser will be assigned to the student.

### Scholastic Requirements

See *General Academic Regulations section.*

### Departmental Honors

A departmental honors program is offered in several of the departments of the College of Education. Application for participation in the program must be made during the junior year. The program may consist of any one of the following: (1) a senior thesis, (2) a reading and tutorial program under the major adviser, (3) honors in student teaching. All students permitted to enter the honors program will meet University regulations as described. Permission of the major adviser is required for enrollment in 497, Reading and Research in Honors.

## Maximum Number of Hours

Undergraduate students enrolled in the College of Education may not enroll for more than 19 hours during a regular semester or 10 hours during an eight-week summer session unless:

1. The student's GPA is 3.0 or higher.
2. A written petition to the chairperson of the department is approved for extra hours, not to exceed 21 in a regular semester or 11 during summer session.

A maximum of eight hours in nonprofessional physical education courses will be counted toward graduation.

## Admission to a Teacher Education Program

If you wish to apply for admission to a teacher education program, determine your eligibility according to one of the following criteria:

1. You are enrolled in University College and
   a. you have completed 14 or more hours and have a 2.5 or higher grade-point average, or
   b. you have completed 26 or more hours and have a 2.0 or higher grade-point average, or
   c. you have a 2.0 or higher grade-point average based upon 24 to 30 hours of work accomplished during the last two or three semester, or
   d. you have received notice that this is your last semester of eligibility.
2. You are enrolled in Arts and Sciences, Fine Arts, B.U.S., or any other degree-granting college, or in non-degree status, and your overall grade-point average is 2.0 or higher.
3. You are a transfer student provisionally enrolled in the College of Education. Some College programs can accept only limited numbers of students each semester; therefore, any student wishing to transfer should check with the department considered prior to making a commitment to move to Albuquerque.
4. You have already earned a bachelor's degree.

After determining that you are eligible for application to a teacher education program, the following procedures will apply:

1. Come to the College of Education, Office of the Assistant Dean for Student Affairs. Complete an Application for Admission to a Teacher Education Program form and obtain information on the compilation of a data folder.
2. Complete and return your data folder to the College of Education, Office of the Assistant Dean for Student Affairs by the second week of each semester or the first week of summer session.
3. Complete an interview with a College of Education faculty member in the program to which you are applying. A student applying for admission into the teacher education program in **art** must bring to the interview a representative sample of his / her art work (slides, photographs, or actual work).
4. Special education minors must successfully complete Sp Ed 201 and 204 before screening into the program.
5. For admission into the teacher education program in art (regardless of the college in which you wish to enroll), you must (a) successfully complete Art Ed 220, taken concurrently with screening into the program, and (b) receive a positive recommendation concerning admission into the program from the professor of Art Ed 220 (or, in some cases Art Ed 320).
6. You will be notified by mail whether or not you have been provisionally admitted to a teacher education program.
7. Before you are moved from provisional status to full admission status, you must complete a Program of Studies form which is approved by your adviser and filed in the Records Office of the College of Education.

The requirements for selection into a teacher education program referred to in the preceding paragraphs are considered to be minimal. Even though students meet these requirements they may not be selected into certain programs. Because departmental programs differ, their admission requirements may go beyond those minimum requirements described above. Therefore, it is important that you contact the chairperson of the department offering the program you wish to enter for further information concerning specific requirements and / or limitations.

Until you are formally admitted to a teacher education program you are not eligible to register for or enroll in any upper division (300- and 400-level) professional education courses required for certification. Exceptions are granted only to transfer students from other institutions during their first semester of enrollment and students who have earned a baccalaureate, and then only upon the recommendation of the department concerned. Early consultation with the department is urged. Graduate students planning to work for initial certification or toward certification in a new teaching field must successfully complete the screening process for admission to a teacher education program during the first semester of enrollment.)

*Note:* Any students admitted to a teacher education program during their junior year will probably be required to spend one or more additional semesters beyond the usual four-year period in order to complete the desired program.

## Admission to the College of Education

If you wish to be admitted to the College of Education you must have successfully completed the screening process for admission to a teacher education program (see previous section).

If you are already enrolled at The University of New Mexico whether in University College, a degree-granting college B.U.S., or in non-degree status, you will not be eligible to transfer to the College of Education or take 300- and 400-level courses until this screening process is completed. Students transferring from other institutions may be enrolled in the College of Education *provisionally* for a maximum of two semesters, during which time they must complete the screening process for admission to a teacher education program.

It is not necessary to be working toward a degree in the College of Education in order to pursue certain secondary education programs. If you plan to become certified as a teacher, however, *you must be admitted to a teacher education program and complete all requirements specified by the program.* Students majoring in art education or music education may be enrolled as a major in the College of Education or the College of Fine Arts. Students majoring in other teacher education programs must be enrolled in the College of Education.

Exceptions to the requirements discussed above are granted to special students wishing admission to an Associate of Arts in Education program. If you are interested in one of these two-year programs or a program not covered in the discussion above, contact the Office of the Assistant Dean for Student Affairs in the College of Education for information concerning curricula and enrollment requirements. Students who are selected to work toward an Associate of Arts in Education will be admitted to a specific program rather than to University College.

## Professional Laboratory Experience

All degree programs offered through the College of Education include organized and sequential experiences with children and youth or adults. These required experiences (usually referred to as *professional laboratory experiences*) include directed observation of pupils at work and at participation with groups of children, youth, adults, and formal student teaching assignment(s).

### Observation and Participation

Selected elementary and secondary schools in the Albuquerque Public Schools, other nearby school systems, selected community agencies are used for observation participation with children, youth, and adults. These teaching experiences are carefully planned and directed cooperatively by University faculty members and representatives of the cooperating school systems and agencies.

### Student Teaching

The student-teaching assignment is considered one of the most important prerequisites to graduation and certification for teaching. The student-teaching assignment is performed under the personal direction of selected cooperating teachers in the Albuquerque area public and private school systems or agencies and professors from the University. University of New Mexico is indebted to the administration and teachers of the Albuquerque Public Schools, Navajo Tribe and All Indian Pueblo Council and other school systems throughout the State for the excellent working rel

ships and learning laboratories provided under these arrangements. Because of the importance of this experience, specific requirements are set up for admission to student teaching.

**Requirements for Admission to Student Teaching**

The student must have:

1. Earned an overall grade-point average at The University of New Mexico of at least 2.0; specifically, the student may not be on probation. Graduate students must maintain a 3.0 grade-point average.
2. Been admitted to a teacher education program at The University of New Mexico. Any stipulations indicated at the time of admission must have been removed.
3. Applied for admission to student teaching with the departmental supervisor of student teaching the semester before the actual teaching begins, with the exception of elementary education in which case admission should be sought the spring before.
4. Completed and passed a tuberculosis skin test. Anyone who shows a positive result must follow up with a chest x-ray. Evidence of the examination and its findings, completed within three months of the date of application, must be filed with the Directors of Secondary or Elementary School Student Teaching at the time application is made.
5. Achieved a grade-point average of at least 2.3 in all courses attempted in the major teaching area. Some departments require a higher grade-point average.
6. Completed satisfactorily all prerequisites for student teaching listed in the current University catalog.
7. Planned a total semester schedule of no more than 15 hours of course work, including student teaching. (A course load of 12 hours is highly recommended.) *Majors in elementary education must plan for two professional semesters. They must be available morning hours for the methods-module semester and for the entire school day during the student-teaching semester. Secondary student teachers must have a minimum block of three hours daily (between 8:30 a.m. and 3:00 p.m.) clear for assignment in the schools.*
8. Filed application for degree in the office of the Dean of the College.
9. Have on file in College Records a completed and signed program of studies (major and minor).

**cial Requirements for Secondary Student Teachers**

*he student must have:*

- Submitted recommendations from three faculty members indicating that the student is believed ready for student teaching.
- Completed a major portion of work in his / her teaching major and minor.
- Attained at least a 2.8 grade-point average in a major (teaching) concentration and a 2.5 grade-point average in the minor teaching area if applicable. Achieved a general grade-point average of at least 2.5 in all courses attempted at the undergraduate level Graduate students must also meet these requirements and maintain a 3.0 grade-point average.

*Students enrolled in secondary student teaching may be required to comply with a modified academic calendar.*

**ial Requirements for Physical Education Student iers**

ie student must have:

Submitted recommendations from three faculty members, including the student's adviser, indicating that the student is believed ready for student teaching.

Successfully completed a major portion of the theory course work as determined by the adviser in consultation with the student teaching personnel.

Completed all of the following prerequisites: Ed Fdn 290, 303, and 310; PE 107, 217, 245, 277, 289, 301, 302, 309, 310, 326L, 444, and 445.

Removed all Ds and Fs in the major field.

Attained at least a 2.5 grade-point average in the major field and at least a 2.2 grade-point average overall. Full-time student teaching for at least one semester is required as defined by each SATE program.

*Students enrolled in physical education student teaching may be required to comply with a modified academic calendar.*

**Special Requirements for Elementary Student Teaching**

**Admission.** Admission to elementary education is limited. Students are screened and admitted on a competetive basis. Therefore, a number of students who meet the minimum catalog requirements for acceptance to the Department of Elementary Education may be denied admission on a selective basis.

Catalog requirements are regarded as minimal for admission to the Department of Elementary Education; that is, simply meeting the minimum requirements will not automatically result in admission to the Department. Among the criteria that are used to determine admission are grade-point average, standardized test scores, survey test battery results, and personal interview results. These and other criteria are considered in the screening process. The Department admits those students who appear to be best qualified to profit from the Department's teacher preparation program. In addition, students who are admitted may be asked to take their professional semesters at designated times when space is available.

*Professional Blocks.* The methods block combines on-campus instruction with opportunities to observe and work with children in classroom settings: The methods block courses are:

| | |
|---|---|
| El Ed 321 Tchg of Soc Studies in El Sch | 3 |
| El Ed 331 Tchg of Reading in El Sch | 3 |
| El Ed 333 Tchg of Oral / Writ Lang in El Sch | 3 |
| El Ed 353 Tchg of Science in El Sch | 3 |
| El Ed 361 Tchg of Math in El Sch | 3 |

During the student-teaching block, the student is assigned to full-time responsibility in an elementary classroom under the direction of a cooperating teacher. The student-teaching block is:

| | |
|---|---|
| El Ed 400 Stu Tchg in El Sch | 15 |
| El Ed 435L | 3 |

Students enrolled in both the methods and student-teaching blocks are assigned grades of CR (credit is awarded) or NC (no credit is awarded). The hours for these blocks are not computed in the scholarship index. Students should, therefore, exercise caution in selecting credit / no credit grading options in nonprofessional aspects of the undergraduate program.

Most students will be assigned to schools that have been designated in cooperation with the Albuquerque Public Schools as student-teaching centers. In these schools, student teachers are placed with one or more teachers on the staff. In addition, methods-block students work in classrooms throughout the school during the classroom application aspects of the methods block. Students are charged a $10.00 laboratory fee for the methods block and the student-teaching block. This fee is for materials and supplies used in the schools by elementary education students.

A new component of student teaching is provided at teacher education centers on designated Pueblo and Navajo sites.

## Special Facilities Located in the College of Education

**Art Education Building.** The Art Education Building houses classroom, laboratory, and studio facilities for theory, methods, and practicum courses for pre- and in-service art teachers, classroom teachers, and other educational personnel. Also, an Art for Children and Youth Program is offered in the fall, spring, and summer sessions.

**Learning Materials Center.** The Learning Materials Center serves students, faculty, and teachers of the State by providing a comprehensive collection of teaching materials and production facilities for use in the teaching / learning process. Included in the Center's facility are the Tireman Library and the Learning Materials Laboratory. The Tireman Library contains the children's book collection, the Anita Osuna Carr Bilingual-Bicultural Collection, print materials in most subject matter areas, courses of study, and curriculum guides. The Learning Materials Laboratory provides preview areas for media, soundproof rooms, a darkroom, the services of a professional artist, and both materials and consultation to faculty and students in producing teaching materials. A variety of media production equipment is available for use, with training provided.

**Research and Evaluation Center and Statistics Laboratory.** Located in Room 117 of the College of Education, the Center and the Laboratory assist students, faculty or others with research and computer problems. The Laboratory houses computer terminals, printer terminals and related equipment.

**Manzanita Center.** Manzanita Center is an observation and laboratory facility for College of Education and other University students. Students may observe a day-care center and a multiage, multicultural early childhood program in session, an individual student or teacher engaged in specific activity, the administering of diagnostic tests, or remedial teaching. Students may also be directly involved in supervised teaching, remedial activities, counseling individuals or groups, or in practicing skills. The Center has closed-circuit television and video feedback capabilities.

**Industrial Education Laboratories.** Industrial education laboratories are maintained for the use of students in various industrial education courses in woods, metals, welding, power mechanics, electricity, and drafting.

**Home Economics Laboratories.** Modern food and clothing laboratories are available to both undergraduate and graduate students.

**The Human Performance Laboratory.** The laboratory, administered by the Department of Physical Education, is located in Johnson Gymnasium (hypo-hyperbaric facilities in Carlisle Gymnasium). It occupies some 3,000 square feet and is equipped to serve faculty and student research and instructional needs in the areas of environmental (hypo-hyperbaric) physiology, cardiovascular, metabolic, and neuromuscular aspects of physical activity, kinesiology, and perceptual-motor learning and performance.

**Therapeutic Physical Education Laboratory.** This laboratory encompasses some 4,000 square feet and has all of the necessary equipment to provide special physical education and exercise therapy for the students and the staff of The University of New Mexico. A major responsibility of the laboratory involves training of corrective therapists, special physical educators, athletic trainers, and pre-physical therapy students. Research regarding the motor skill learning of handicapped children is carried out.

**Therapeutic Physical Education Playground.** This two-acre playground has been developed to investigate the play patterns and recreation needs of handicapped children.

**Special Physical Education Pool.** Adjacent to Johnson Gymnasium and the olympic-sized pool is a smaller special pool. This smaller pool is utilized to enable undergraduate and graduate students to learn about the handicapped child in an aquatic and therapeutic setting. The pool is additionally used for recreation and instruction for handicapped children.

***Degrees Awarded by the College of Education*** Upon the completion of all specified requirements, including approval by the general faculty, candidates will be awarded the following degrees in the College of Education:

- Associate of Arts in Education for those who concentrate in paraprofessional training in education or in secretarial studies and office supervision.
- Bachelor of Science in Education for those who major in business education, elementary education, mathematics, or a science.
- Bachelor of Science in Home Economics with a major in dietetics.
- Bachelor of Science in Home Economics Education with a major in home economics education.
- Bachelor of Science in Health Education for those who major in health education.
- Bachelor of Science in Physical Education for those who major in physical education.
- Bachelor of Arts in Recreation for those who major in recreation.
- Bachelor of Science in Industrial Education for those who major in industrial education.
- Bachelor of Music Education for whose who major in music education.
- Bachelor of Arts in Education for majors in all other subjects.

## Requirements for Graduation

1. Completion of an application for final degree check *immediately after completion of 92 semester hours.* The application can be obtained from the department or office of the Assistant Dean for Student Affairs.
2. Completion of a minimum of 128 semester hours. No more than 5 semester hours of credit earned in workshops may be used toward any bachelor's degree. (See course 492 listed with each of the education departmental offerings.)
3. A scholarship index of 2.0 or higher on the 128 semester hours being counted for graduation, at least

a 2.0 grade-point average on all work attempted at The University of New Mexico, and at least a 2.3 grade-point average in the major teaching fields.

**Dividends and Penalties.** For every 15 semester hours of A or for every 30 semester hours of B, the hours required for graduation are reduced by one. The maximum of such dividends allowed is four. Dividends may not be applied toward the residence requirement. For every 15 semester hours of D, the hours required for graduation are increased by one. Dividends and penalties are awarded or assessed only on work done in residence at The University of New Mexico.

4. Completion of 40 semester hours in courses numbered 300 or above.
5. For minimum residence requirements, see the General Academic Regulations section of this catalog.
6. Completion of the prescribed curriculum which leads to the desired degree (see Curricula pp.38-43). *The student is solely responsible for completing all requirements for graduation, as described in this catalog.*
7. Students who plan to teach in the State of New Mexico must complete the Application for New Mexico Certificate form available from the graduation clerk in the College of Education Records Office.

*Note:* Students who plan to teach in the secondary school must complete a teaching major and minor in subjects usually taught in secondary schools. See description of programs in secondary education for details. Students who plan to teach in the elementary schools must complete a major or minor of at least 24 semester hours in a subject area. They must follow the curriculum as outlined in Elementary Education following.

**General (Liberal) Education Requirements**

All prospective educational personnel should be broadly educated as a foundation for a successful professional career. It is required, therefore, that UNM students expecting to get degrees from the College include in their preparation program a well-balanced plan of study in general education. Students must satisfy minimum requirements (48 semester hours) in six of the following ten areas of study:

1. Behavioral sciences
2. Communication arts
3. Multicultural studies
4. Fine and practical arts
5. Foreign language
6. Humanities
7. Mathematics
8. Natural sciences
9. Health education, physical education, and recreation
10. Social sciences

Students should consult their major department to plan a program which satisfies specific departmental general education requirements. A program plan must be on file in the department for each student.

**Professional Educational Requirements**

Students pursuing teacher education curricula must complete the three professional education courses listed below:

1. Ed Fdn 290 Foundations of Education
2. Ed Fdn 303 Human Growth and Development*
3. Ed Fdn 310 Learning and the Classroom*

In addition to these three courses (the professional core), all students must take other professional education courses as prescribed in the curriculum they are following. A minimum of 24 semester hours in professional education is required. *In some programs Ed Fdn 303 and 310 are part of a module. Students should check with the appropriate department for further information.*

## Curricula

Curricula are outlined on the following pages under the respective departments for the purpose of directing students in their chosen fields of work. Descriptions for the courses listed will be found later in this bulletin. Note carefully the prerequisites that are specified because these determine the sequence in which courses may be taken. Also note that not all courses are offered every semester. The listings in this catalog indicate the general pattern in which the courses are offered, but you will still need to consult the Schedule of Classes in order to find out specifically what is to be given in a particular semester.

* or approved substitute.

## ART EDUCATION

**Major Study for Teacher Certification in Art or Arts and Crafts, all Levels (Grades 1-12) or Secondary Level (Grades 7-12)** A student may enroll in either the College of Education or the College of Fine Arts to satisfy requirements for art or arts and crafts teaching certification for grades 7-12. The objectives, course requirements, and degrees of each college for 7-12 certification differ except for the screening and teacher certification requirements of the College of Education which apply to both teacher education curricula. The College of Education offers a Bachelor of Arts in Education degree; the College of Fine Arts offers a Bachelor of Fine Arts degree. A student may satisfy requirements for art or arts and crafts teaching certification in grades 1-12 only by enrolling in the College of Education.

The candidate for the B.A. in Education must satisfy general College and University requirements stated in this catalog and department requirements outlined below.

A student who wishes to be admitted into a teacher education program in art or arts and crafts, regardless of the college in which he / she wishes to enroll, is required to meet the screening criteria and procedures of the College of Education (outlined earlier) and the Department of Art Education. This screening is generally done in the first semester of the sophomore year concurrently with the Department's prerequisite screening course, Art Ed 220. The Department recommends a student be admitted into the teacher education program in art education upon completion of Art Ed 220 with at least a grade of B (or, in some cases, also Art Ed 320) and a positive recommendation from a department faculty interviewer, who also reviews a representative selection of the student's art work as a required part of the interview.

Upon admission into the teacher education program in art, the student who chooses to enroll in the College of Education will be assigned a department faculty adviser. In consultation with this adviser, the student must design and contract an official program of studies. Also the student is required to meet with his / her faculty adviser each semester to plan course work throughout the entire program.

**Curricula for Art Education Majors**

There are two curriculum options in the Department of Art Education which qualify the student to apply for certification by the New Mexico State Department of Education to teach a) (Option I) art or arts and crafts in grades 1-12 or grades 7-12, and b) (Option II) art or arts and crafts in grades 1-12 or grades 7-12 with a second teaching area (grades 7-12) chosen from an approved list of certifiable teaching areas (e.g. math, social studies, English, etc.). The student may select the option (with the assistance and approval of his%her adviser) which best meets his / her needs. Should the student decide on Option II, a minor adviser will be assigned in the Department of Secondary and Adult Teacher Education (or other appropriate departments within the College of Education). Under Option II it is possible for the student to develop two teaching areas within a four year period.

**Option I-B.A. in Art Education with 1-12 or 7-12 Art or Arts and Crafts Teaching Certification**

This Option is available for the student who desires to be prepared to teach art or arts and crafts at the elementary, middle / junior / and senior high school levels (1-12) or at the secondary level only (7-12). The student choosing this curriculum option needs to design a program of studies, in consultation with an appointed faculty adviser, which meets the criteria for specific certification at the appropriate level. Student teaching will be assigned to correspond with the program selected.

**Option I B.A. in Art Education with 1-12 or 7-12 Art or Arts and Crafts Teaching Certification**

I. GENERAL (LIBERAL) EDUCATION REQUIREMENTS - 48 HOURS

‡ A. Art St 121 (3), 122 (3), Art Hi 101 (3) and Art Hi 151 (3) plus 6 hours selected from music, theatre arts, industrial arts or architecture †18 hours

B. plus 30 hours, which must include a minimum of 6 hours in four of the areas listed below:

1. Humanities and / or social science
2. Behavioral science
3. Biological and / or physical science
4. Foreign language
5. Communicative arts
6. Mathematics
7. Fine and practical arts (excluding Art Studio Art History or Art Education).
8. Health education, physical education and / o recreation 30 hour

II. PROFESSIONAL EDUCATION COURSES -12 HOURS

Ed Fd 290 (3) Foundation of Education
Ed Fd 303 (3) Human Growth and Development
Ed Fd 310 (3) Learning in the Classroom
SATE 438 (3) Teaching Reading in the Conten Field 12 hour

III. ART EDUCATION REQUIREMENTS - 15 HOURS

Art Ed 220 (3) Teaching Art in the Elementary Scho
Art Ed 320 (3) Teaching Art in the Secondary Scho
Art Ed 400 (3) Elementary Student Teaching in Art
Art Ed 460 / 461 (6) Student Teaching in the Middle Junior / Senior High School 15 hou

IV. TEACHING AREA - 54 HOURS

†A. Basic art courses

Art St 121 (3) Two Dimensional Design
Art St 122 (3) Three Dimensional Design
Art Hi 101 (3) Principles of Art
Art Hi 151 (3) Artistic Traditions of the Southwest
Art Hi 202 (3) History of Art II
Art St 106 (3) Fundamentals of Drawing
Art St 205 (3) Drawing I
Art St 306 (3) Drawing II †24 hou

B. Studio concentration I
A planned concentration of 9 hours in a sin studio area, 6 hours of which must be in cours numbered 300 or above 9 hou

C. Studio concentration II
A planned concentration of 9 hours in a secc studio area (different from B. above), 6 hours which must be in courses numbered 300 above 9 ho

D. Art / Art Ed electives
A planned concentration of electives approved the student's adviser to fulfill teaching area c ification requirements. Crafts certification m include 12 hours of work selected from ramics, jewelry or weaving, (e.g., Art Ed 430 Studio Art in the Schools: Weavi etc.). 12 hc

†FREE ELECTIVES - 12 HOURS 12 hc

Total 129 hc

**Option II - B.A. in Art Education 1-12 or 7-12 Art or and Crafts and a Second Teaching Area (e.g. math, sc studies, English, etc.) Certification.**

This Option is available to the student who wishes t prepared to teach art or arts and crafts at either the eler tary, middle / junior / and senior high school levels (1-12) the secondary level only (7-12) plus a second teaching at the secondary level (grades 7-12) (e.g., math, s studies, English, etc). The student selecting this o must design a program of studies, in consultation wit appointed Art Education adviser plus one from the De ment of Secondary and Adult Teacher Education (or appropriate departments within the College of Educa which meets the criteria established for two teaching certifications. Student teaching will be assigned in bot Education and the second teaching area to correspond the program selected.

†I. GENERAL EDUCATION REQUIREMENTS - 48 HO

A. Art St 121 (3), 122 (3), Art Hi 101 (3) and 151 (3) plus 6 hours selected from music, tre arts, industrial arts or architecture †18

††B. Plus 30 hours, which must include a min of 6 hours in four of the areas listed belo hours from the second teaching content are count in these hours and represent one four areas below—e.g., 6 hours of E courses for area 5. Communication Arts, hours of math courses for area 6 Mathema

1. Humanities and / or social science
2. Behavioral science
3. Biological and / or physical science
4. Foreign language
5. Communicative arts

6. Mathematics
7. Fine and practical arts (excluding art studio, art history and art education)
8. Health education, physical education and/or recreation ††30 hours

II. PROFESSIONAL EDUCATION REQUIREMENTS - 12 HOURS

Same as Option I Curriculum (see above) 12 hours

III. ART EDUCATION REQUIREMENTS - 15 HOURS

Same as Option I Curriculum (see above) 15 hours

†IV. TEACHING AREA ONE -42 HOURS

A. Basic art courses
Art St 121 (3) Two Dimensional Design
Art St 122 (3) Three Dimensional Design
Art Hi 101 (3) Principles of Art
Art Hi 151 (3) Artistic Traditions of the Southwest
Art Hi 202 (3) Art History II
Art St 106 (3) Fundamentals of Drawing
Art St 205 (3) Drawing I †21 hours

B. Major studio concentration

Same as Option I Curriculum (see above) 9 hours

C. Art/Art Ed Electives

Same as Option I Curriculum (see above) 12 hours

††V. TEACHING AREA TWO - 30 HOURS

(e.g. math, English, Spanish, social studies, etc.)
††Courses in Teaching Area Two - 24 hours
SATE (3) Methods of Teaching Area Two
SATE 461 (3) Student Teaching in Area Two ††30 hours

Total 129 hours

**)PTION I CURRICULUM**

**\rt or Arts and Crafts Certification Grades 1-12 or 7-12**

**FIRST YEAR**

First Semester

| | |
|---|---|
| General education requirements | 9 |
| Art St 121 2-D Design | 3 |
| Art Hi 101 Principles of Art | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| General education requirements | 6 |
| Art St 122 3-D Design | 3 |
| ¶Teaching area requirements | 6 |
| | 15 |

SECOND YEAR

First Semester

| | |
|---|---|
| General education requirements | 3 |
| Ed Fdn 290 Foundations of Ed | 3 |
| ‡Art Ed 220 Tchg Art El Sch | 3 |
| Art Hi 151 Artist Traditions SW | 3 |
| Teaching area requirements | 6 |
| | 18 |

Second Semester

| | |
|---|---|
| General education requirements | 3 |
| Ed Fdn 303 Human Growth and Devel | 3 |
| ‡Art Ed 320 Tchg Art Sec Sch | 3 |
| Art Hi 202 History of Art II | 3 |
| Teaching area requirements | 6 |
| | 18 |

THIRD YEAR

First Semester

| | |
|---|---|
| General education requirements | 6 |
| Ed Fdn 310 Learning and the Classroom | 3 |
| Teaching area requirements | 6 |
| Free elective | 3 |
| | 18 |

Second Semester

| | |
|---|---|
| General education requirement | 3 |
| §Art Ed 400 Stu Tch in Elem Sch | 3 |
| Teaching area requirements | 6 |
| Free Elective | 3 |
| | 15 |

FOURTH YEAR

First Semester

| | |
|---|---|
| General education requirement | 3 |
| Art Ed 460 Stu Tch Mid/Jr High Sch | 3 |
| SATE 438 Tchg Reading in the Cont Fld | 3 |
| Teaching area requirements | 6 |
| | 15 |

Second Semester

| | |
|---|---|
| General education requirement | 3 |
| Art Ed 461 Stu Tch in High Sch | 3 |
| Teaching area requirement | 3 |
| Free elective | 6 |
| | 15 |

Total 129 hours

**Option II Curriculum Art or Arts and Crafts Certification Grades 1-12 or 7-12 plus Second Teaching Area Certification (e.g. math)**

FIRST YEAR

First Semester

| | |
|---|---|
| General education requirements | 6 |
| Art St 121 2-D Design | 3 |
| Art Hi 101 Principles of Art | 3 |
| ¶Teaching area two requirement | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| General education requirement | 3 |
| Art St 122 3-D Design | 3 |
| ¶Teaching area one requirements | 6 |
| Teaching area two requirement | 3 |
| | 15 |

SECOND YEAR

First Semester

| | |
|---|---|
| General education requirement | 3 |
| Ed Fdn 290 Foundations | 3 |
| ‡Art Ed 220 Teach Art in Elem Sch | 3 |
| Art Hi 151 Artistic Traditions of SW | 3 |
| Teaching area one requirements | 6 |
| | 18 |

Second Semester

| | |
|---|---|
| General education requirement | 3 |
| Ed Fdn 303 Human Growth and Devel | 3 |
| ‡Art Ed 320 Teach Art in Sec Sch | 3 |
| Art Hi 202 History of Art II | 3 |
| Teaching area one requirement | 3 |
| Teaching area two requirement | 3 |
| | 18 |

THIRD YEAR

First Semester

| | |
|---|---|
| General education requirements | 6 |
| Ed Fdn 310 Learning and the Classroom | 3 |
| Teaching area one requirement | 3 |
| Teaching area two requirements | 6 |
| | 18 |

Second Semester

| | |
|---|---|
| General education requirement | 3 |
| §Art Ed 400 Stu Tchg Art in Elem Sch | 3 |
| Teaching area one requirement | 3 |
| Teaching area two requirements | 6 |
| | 15 |

SENIOR YEAR

First Semester

| | |
|---|---|
| General education requirement | 3 |
| Art Ed 460 Stu Tchg Art Mid/Jr High Sch | 3 |
| SATE 400 Level Method of Teach Area Two | 3 |
| SATE 438 Tchg Reading Cont Fld | 3 |
| Teaching Area One Requirement | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| General education requirement | 3 |
| Art Ed 461 Stu Tchg Art Sch | 3 |
| SATE 461 Stu Tchg Area Two | 3 |
| Teaching area two requirement | 3 |
| Teaching area one requirement | 3 |
| | 15 |

Total 129 hours

**Minor Study in Art Education for Elementary Majors Only (24 Hours)**

Art St 121, Art St 122, Art Hi 101

Art Elective (200 level, 3 hrs)

Art Ed 214, Art Ed 215, Art Ed 220 and Art Ed elective (400 level, 3 hrs)

**For Students in Other Than Teacher Training Programs (18 Hours)**

Nonteaching minor requirements: Art St 121, Art St 122, Art St elective (200 level, 3 hrs); Art Ed 285, Recreation Arts and Crafts (3 hrs); additional hours to be determined with an appointed art education adviser.

**Graduate Program**

The Department offers an M.A. in Art Education. Also, a doctoral concentration in Art Education (Ph.D. in Education and Ed.D) is being planned. For details write the Department of Art Education. For details of the graduate program see the Graduate Programs Bulletin.

## Business Education

See p. 44 for information about programs in business education.

## Educational Administration

See p. 97 for course descriptions and the Graduate Programs Bulletin for all graduate programs.

## Educational Foundations

This Department houses the Library/Media program which may be taken as a minor in several departments. Students interested in this minor should see the adviser in their major department and the chairperson of Educational Foundations. Course offerings meet state certification requirements in Library/Media. See p. 97 for course descriptions and the Graduate Programs Bulletin for all graduate programs.

## Elementary Education

**CURRICULUM FOR STUDENTS PREPARING TO TEACH IN ELEMENTARY SCHOOLS**

All prospective elementary school teachers are required to complete a minimum of 54 semester hours in general education. A program of studies in general education is to be designed by the student and an adviser. It shall include the minimum hours indicated in all of the following areas:

| | |
|---|---|
| Humanities/social sciences | 6 |
| Behavioral sciences | 6 |
| Natural and/or physical sciences | 6 |
| Communication arts | 6 |
| Mathematics | 9 |
| Multicultural studies/language of the Southwest (written agreement between student and adviser) | 6 |
| Fine and practical arts | 3 |
| Health, physical education, and recreation | 3 |
| Electives | 9 |
| Total | 54 |

The student pursuing a degree in elementary education should contact the office of Student Services in the Department of Elementary Education for academic

†Please note that that Art St 121, 122, Art Hi 101 and 151 (12 hours) fulfill requirements in both areas of General (liberal) Education and the Teaching Area. However, these 12 hours are counted only once toward the 129 total hours for graduation.

††Six (6) hours of course work may fulfill requirements in both areas of General Education and Teaching Area Two. For example, a student working for a second teaching area in Math may take 6 hours of Math courses which fulfill requirements for Math certification and fulfill 6 hours of course work in General Education under area number 6. Mathematics; however, these 6 hours are counted only once toward the total 129 hours for graduation.

¶In order to fulfill the specified teaching area(s) requirements for certification under either Option I or II curriculum, a program of studies must be carefully designed in consultation with appointed faculty adviser(s) no later than the first semester of the second year and must be followed each semester.

‡Art Ed 220 may be taken in the second semester of the second year followed by Art Ed 320 in the first semester of the third year.

§Art Ed 400 is not required for 7-12 certification only; a 400 level Art Education elective must be substituted. For 1-12 certification, Art Ed 400 is required and may be taken in the first semester of the third year if the student has successfully completed Art Ed 220 and 320.

counseling and a list of suggested courses that satisfy these requirements.

The faculty of the Department of Elementary Education sees the role of the elementary teacher in the Southwest as one that requires a broad education which is supportive to multicultural needs of southwestern communities. With respect to the general education requirements, the intent of the Department of Elementary Education is: (1) to encourage learning in a wide range of study areas and (2) to encourage a pursuit of study somewhat unique to each student. Therefore, a number of options in each general education area listed above is available. Selection may be based on the student's background, goals in education, and interests.

In keeping with the Department of Elementary Education's commitment to the multicultural needs of the Southwest, the student, in consultation with an adviser, must develop an individual plan for meeting the multicultural studies requirement. Selecting courses clearly focused on multicultural study, developing fluency in a language spoken in the Southwest, participating in an independent study, or developing a field experience are among the options possible. The student and his / her faculty adviser in the Department of Elementary Education will develop an individually profitable way to fulfill the multicultural requirement.

In addition to the general education requirements, all prospective elementary teachers are required to complete the following prescribed professional education courses:

| | |
|---|---|
| Ed Fdn 290 Foundations of Ed | 3 |
| El Ed 319 PE in El Sch | 3 |
| El Ed 441 Child Lit | 3 |
| Art Ed 214 Art El-Spec Classrm 1 | 3 |
| Music Ed 298 | 3 |
| Ed Fdn 303 Human Gwth and Dev | 3 |
| Ed Fdn 310 Lrng and Classrm | 3 |
| Methods block | |
| El Ed 321 Tchg of Soc Studies in El Sch | 3 |
| El Ed 331 Tchg of Reading in El Sch | 3 |
| El Ed 333 Tchg of Oral / Writ Lang in El Sch | 3 |
| El Ed 353 Tchg of Science in El Sch | 3 |
| El Ed 361 Tchg of Math in El Sch | 3 |
| Student Teaching Block | |
| El Ed 400 Stu Tchg in Elem Sch | 15 |
| El Ed 435L Remedial Reading | 3 |
| El Ed 400 Stu Tchg In Elem Sch | 15 |

**Minor Requirements for Elementary Education Majors**

Elementary education majors are required to complete a minor of 24 semester hours in a subject area or a composite minor of 30 semester hours approved by the Department of Elementary Education.

Students wishing to pursue a 24-semester-hour minor in a subject area should consult the minor study requirements in the appropriate department in the Courses of Instruction section of this catalog. Those interested in preparing to teach in special education classrooms should see the minor study in special education 'Department of Special Education.'

Composite minors have been approved in bilingual education, early childhood studies, science, and the social science.

COMPOSITE MINOR IN BILINGUAL EDUCATION-SPANISH / ENGLISH. This minor is designed for students wishing to prepare for teaching in Spanish / English bilingual classrooms. State bilingual teacher certification requires specific levels of mastery in the areas of language (Spanish), culture, and pedagogy. The student interested in a composite minor in bilingual education-Spanish / English should contact the Student Services Office in the Department of Elementary Education as early in his or her college career as possible for information, including recommended courses to be taken, before seeking admission to the Department.

COMPOSITE MINORS IN NAVAJO / ENGLISH BILINGUAL EDUCATION and in other southwestern Indian languages are also available. The student interested in such a minor should contact the Student Services Office in the Department of Elementary Education for information, including recommended courses to be taken, before seeking admission to the Department.

COMPOSITE MINOR IN EARLY CHILDHOOD STUDIES. This is a 30-hour composite minor, designed for majors in elementary education and other education fields who wish to prepare for teaching in the preschool and primary years. However this minor program leads to New Mexico 24 Hour Kindergarten Endorsement only when combined with the elementary education major program.

A. Development

Select from:
- Home Ec 102L Infant Gwth and Dev
- †Home Ec 408L Child Gwth and Dev
- Ed Fdn 303 Human Gwth and Dev
- Psych 220 Dev Psych
- Com Dis 430 Dev of Speech and Lang
- Anth 309 Comp Studies of Socialization 9-15 hours

B. Psychology

Select from:
- Psych 101 Gen Psych
- Psych 102 Gen Psych
- Psych 230 Psych of Adjustment
- Psych 373 Cross Culture Psych
- Psych 432 Clinical Child Psych
- Psych 428 Cognitive Dev 9-15 hours

Courses Selected from A and B above must total 24 hours.

C. Early childhood education

†El Ed 305 Tchg Kindergarten Prim Yrs

(Additional 3 hours in Early Childhood to be taken in conjunction with Student Teaching) 6 hours

COMPOSITE MINOR IN SCIENCE. This is designed for students wishing to pursue a broad field's study of science. Acceptable fields include astronomy, biology, chemistry, geology, physical science, and physics.

The minor must include at least 12 semester hours of work in each of two departments (such as biology and geology) and at least 6 semester hours in a third department.

COMPOSITE MINOR IN THE SOCIAL SCIENCES. This is designed for students wishing to pursue a broad field's study of the social sciences. Acceptable fields include anthropology, economics, geography, political science, history, and sociology and psychology.

The minor must include at least 12 semester hours of study in each of two departments (such as geography, political science, anthropology, and economics) and at least 6 hours in a third department.

Students who successfully complete the curriculum for elementary education and earn a bachelor's degree are eligible to apply for a Provisional Elementary Certificate. This is a four-year, grades 1-8 certificate, renewable only once.

By the end of the eight-year period of provisional certification, the holder must qualify for either the Continuing Certificate, the Professional Certificate, or other special fields certificates.

GRADUATE PROGRAM. The Department also offers graduate programs leading to the master's and doctor's degrees and the Certificate of Education Specialist. Students wishing to pursue one of these programs should consult the Chairperson and the Graduate Programs Bulletin for details.

GUIDANCE AND COUNSELING. This department offers work leading to the Master's in Guidance and Counseling. The doctorate is offered in counseling. Students may complete a planned program of 30 semester hours of work above the master's degree leading to the Certificate of Education Specialist. The master's degree in counseling may be pursued in one of the following areas of emphasis: elementary school, counseling, secondary school counseling, college personnel work, rehabilitation counseling, mental health counseling, or general counseling. Doctoral work in counseling provides emphasis in counselor education, counseling research, counseling psychology, college personnel work, or pupil personnel services. Students wishing to pursue any of these programs should refer to the Graduate Programs Bulletin.

## Health, Physical Education, and Recreation

**MAJOR STUDY IN HEALTH EDUCATION**

(Leading to a Bachelor of Science in Health Education)

Two tracks are available to students majoring in health education. Track one is school health education which leads to teacher certification and prepares the student to teach health in elementary and secondary schools. Track two, community health education, is a nonteaching track. This track provides students with a broad-based introduction to community and public health and prepares them for professional service in community health agencies. The community health emphasis also prepares students for graduate studies in community health education, at UNM or any of the many schools of public health in the United States.

†Home Ec 408, and El Ed 305 are prerequisites for early childhood student teaching.

SCHOOL AND COMMUNITY HEALTH EDUCATION

FIRST YEAR
(same for both tracks)

- H Ed 164 First Aid
- H Ed 171 Personal & Community Health
- *Soc 101 Intro Soc or Appr Altern
- *Psych 101 or 102 General Psych
- *Biol 121L Prin of Biol
- *Chem 111L Elem Gen Chem
- *H Ec 125 Intro to Nutrition
- *Biol 122L Prin of Biol
- *Engl 219 Tech Wrtg or Eng 220 Expos Wrtg
- *Electives 3

SECOND YEAR
School Health

- H Ed 260 Intro to Hlth Ed
- H Ed 301 General Safety Ed
- *Anthro 130 Cult of Wld
- *Biol 136-139L Hum Anat and Physiol
- H Ed 212 Fund Human Sexuality
- *Biol 239L Micro for Hlth Sc
- *Sp Com 130 Pub Speaking
- Ed Fdn 290 Fdn of Education
- H Ed 247 Consumer Health
- *Electives

COMMUNITY HEALTH

- H Ed 260 Intro to Hlth Ed
- *Approv Cult Anthro or Cult Geograph
- *Biol 136-139L Hum Anat & Physiol
- *Approv Intro to Statistics
- *Econ 335 Econ of Hlth or Soc 321 Soc of Med
- Biol 221 Genetics or 239L Micro for Hlth Sc
- *Approv Sp Comm Course
- *Ed 300 Human Growth and Dev
- H Ed 247 Consumer Hlth
- Electives

THIRD YEAR
School Health

- H Ed 345 Prof Lab Exp
- Ed Fdn 303 Human Gwth and Dev
- Ed Fdn 310 Lrng in Classroom
- H Ed 333 Ment / Emo Hlth in Classroom
- H Ed 471 Intro to Comm Hlth
- H Ed 442 Emerg Hlth Care
- H Ed 469 Elem Sch Hlth
- Lib Sci 432 Prod of Inst Mat
- H Ed Electives (selected w / advisement)
- Multicultural Elective

COMMUNITY HEALTH

- *Psych 210 Ed Psych
- *Psych 230 Psych of Adjust or Psych 260 Psych of Learn
- *Psych 371 Soc Psych
- H Ed 471 Intro to Comm Hlth
- H Ed 345 Prof Lab Exp
- Approv Sp Comm (Upper Division)
- *Engineering Course - General Ed
- Lib Sci 432 Prod of Inst Mat

| | |
|---|---|
| Approv H Ed Electives | 6 |
| Electives | 3 |
| | 33 |

FOURTH YEAR
School Health

| | |
|---|---|
| SATE 438 Tchg Rdg Content Field | 3 |
| H Ed 475 Alt Apprch in Drug Ed | 3 |
| H Ed 470 Sec Sch Hlth and H Ed | 3 |
| H Ed 400 Stu Tchg Elem Sch | 3 |
| H Ed 461 Stu Tchg in Sec Sch | 3 |
| H Ed 451 Curr in Hlth Ed | 3 |
| H Ed 520 Teach Human Sexuality | 3 |
| Elective | 3 |
| | 24 |

COMMUNITY HEALTH

| | |
|---|---|
| H Ed 495 Field Experience I | 3 |
| H Ed 470 Sec Sch Hlth and H Ed | 3 |
| *Multicultural Elective | 3 |
| H Ed 495 Field Experience II | 3 |
| Approv H Ed Electives | 9 |
| Electives | 9 |
| | 30 |

**General Education for Health Education Majors**

Students must develop a written plan of study for general education in consultation with a health education faculty adviser. The plan shall consist of a minimum of 48 hours, including couses and electives designated by the (*) in the major programs. Screening by health education faculty is a prerequisite to entering either track.

MINOR STUDY IN HEALTH EDUCATION. A minor in school health or community health consists of a minimum of 24 hours. Minor programs must be planned with a health education faculty adviser.

**Major Study in Physical Education**

HIGH SCHOOL PREPARATION. Students intending to study professional physical education should prepare themselves adequately in high school with courses in biology, algebra, chemistry, and physics.

CURRICULA FOR STUDENTS PREPARING TO TEACH PHYSICAL EDUCATION. Curricula leading to the degree of Bachelor of Science in Physical Education are designed to prepare the student to teach physical education in elementary, middle, and / or junior and senior high schools. Students completing the program are eligible to apply for a four-year teaching certificate in New Mexico. A 24-hour minor is required.

**Major Study in Physical Education**

FIRST YEAR

| | |
|---|---|
| *Eng 101 w / Rdgs in Expos or equivalent | 3 |
| *Psych 101 Gen Psych or 102 Gen. Psych | 3 |
| Math 120 Intermed Algebra | 3 |
| *H Ec 125 Intro Nutrition | 3 |
| *Biol 136 Hum Anat and Physiol | 3 |
| Biol 139L Hum Anat and Physiol Lab | 1 |
| *H Ed 164 First Aid | 3 |
| PE 115 Women Gymnastics or PE 117 Men's Apparatus Stunts | 1 |
| PE 231 Flickerball, Flag Football, Field Hockey, Basketball | 1 |
| PE 232 Golf, Folk Dance | 1 |
| PE 233 Soccer, Speedaway, Racketball | 1 |
| PE 234 Volleyball, Track and Field | 1 |
| PE 273 Intro to Ath Trng | 2 |
| PE 289 Tests and Meas in PE | 3 |
| *Communication arts elective | 3 |
| *General education elective | 3 |
| | 35 |

SECOND YEAR

| | |
|---|---|
| PE 217 PE in Elem Sch | 3 |
| PE 235 Tennis, Aerobics | 1 |
| PE 236 Personal Defense, Archery | 1 |
| PE 237 Softball, Team Handball, Badminton | 1 |
| PE 238 Wrestling or Mod Dance and Wght Trng | 1 |
| PE 245 002 Prof Lab Exp in PE | 2 |
| PE 277 Kinesiology | 3 |
| PE 288 Motor Lrng and Perform | 3 |
| *Humanities / social science electives | 6 |
| *Multicultural studies | 3 |
| *General education electives | 6 |
| *Minor | 3 |
| Ed. Fdn 290 | 3 |
| | 36 |

THIRD YEAR

| | |
|---|---|
| *Minor | 3 |
| Psych 260 or 210 or Ed Fdn 310 Lrng in Classrm | 3 |
| Psych 220 or Ed Fdn 303 Hum Gwth and Dev | 3 |
| PE 444 Tchg PE 1 | 4 |
| PE 301 Tchg Team Sports | 2 |
| PE 310 Folk Dance in the Sch Prog | 2 |
| PE 445 Tchg of PE II | 4 |
| PE 302 Tchg of Indiv and Dual Sports | 2 |
| PE 309 Tchg of Gymnastics | 2 |
| PE 326 Physiol of Exercise | 3 |
| PE activity elective (including dance) | 3 |
| Lifesaving or equivalent | 1 |
| PE 107 Water Safety Instr or Certif | 2 |
| | 34 |

FOURTH YEAR

| | |
|---|---|
| **PE 378 Prin of PE | 3 |
| §PE 400 Stu Tchg in El Sch (optional) | 6 |
| **PE 452 Org of Sports Prog | 3 |
| PE 461 Student Tchg in Sec Sch * | 9 |
| PE 466 Special PE | 3 |
| **PE 479 Org and Admin of PE | 3 |
| SATE 438 Tchg Rdg in Content Fld | 3 |
| PE activity elective | 1 |
| Minor | 6 |
| | 37 |

Student teaching, all day, 10 week experience, taken with PE 378, PE 479 and / or PE 452.

Students who, for any reason, interrupt their progress in the physical education program at UNM for more than two consecutive semesters must be rescreened.

Physical education majors will not be allowed to graduate with a grade of D or lower in a course in their major field.

Physical education minors must meet the same requirements as majors in reference to grades and must have a 2.5 average in their minor courses.

**Minor Study in Physical Education**

| | |
|---|---|
| PE 209 Fdn of Human Perform | 3 |
| PE 217 PE in the Elem Sch | 3 |
| PE 231 Flickerball, Flag Football, Field Hockey, Basketball | 1 |
| PE 232 Folk Dance, Golf | 1 |
| PE 234 Volleyball, Track and Field | 1 |
| PE 237 Softball, Team Handball, Badminton | 1 |
| PE 245 001 Prof Lab Exper in PE | 2 |
| PE 288 Motor Lrng and Perform | 3 |
| PE 301 Tchg of Team Sports (must be taken concurrently with PE 310 and 444) | 2 |
| PE 310 Folk Dance in the Sch Prog (must be taken concurrently with PE 301 and 444) | 2 |
| PE 444 Tchg of PE | 4 |
| PE 378 Prin of PE | 3 |
| | 26 |

**Minor Study in Physical Education Designed for Students interested in Special Education**

| | |
|---|---|
| PE 107 Water Safety Instr (or Certificate) | 2 |
| PE 209 Fdns of Hum Perform | 3 |
| PE 217 PE in Elem Sch | 3 |
| PE 231 Flickerball, Flag Football, Field Hockey, Basketball | 1 |
| PE 232 Folk Dance, Golf | 1 |
| PE 234 Volleyball, Track and Field | 1 |
| PE 233 Soccer, Speedaway, Racquetball | 1 |
| PE 288 Motor Lrng and Perform | 3 |
| PE 301 Tchg of Team Sports | 2 |
| PE 444 Tchg of PE | 4 |
| PE 466 Special PE | 3 |
| PE 467 Survey of Phys Defects and Path | 3 |
| | 27 |

*Courses to fulfill general education requirements. Juniors and seniors only.

**The Department of Health, Physical Education and Recreation will not recommend an individual for certification in physical education unless said individual has completed all departmental requirements for graduation as a physical education major. This includes completing a minor.

**Minor Study in Athletic Coaching (Not available to physical education majors.)**

| | |
|---|---|
| PE 273 Athletic Trng | 2 |
| PE 209 Fdn Human Perf | 3 |
| PE 481 Adm Varsity Athletics | 3 |
| PE 495 Field Exper | 3 |

Choose two of the following three courses:

| | |
|---|---|
| PE 288 Motor Lrng | 3 |
| PE 378 Prin of PE | 3 |
| PE 452 Org of Spts Prog | 3 |

Choose nine hours from the following group:

| | |
|---|---|
| PE 202 Theory and Prac of Baseball | 2 |
| PE 203 Theory and Prac of Wrestling | 2 |
| PE 204 Theory and Prac of Track and Field | 2 |
| PE 205 Fund of Basketball | 2 |
| PE 206 Fund of Football | 2 |
| PE 207 Theory and Prac of Swmng | 2 |
| PE 309 Tchng Gymnastics | 2 |
| PE 464 Theory of Football | 3 |
| PE 465 Theory of Basketball | 3 |
| PE 245 004 Prof Lab Exper | 2 |
| | 26 |

**Athletic Training Option**

(Leading to the degree of Bachelor of Science in Physical Education, with a minor in biology, and national certification in athletic training)

FIRST YEAR

| | |
|---|---|
| Engl 101 Wrtg w / Rdgs in Expos or equivalent | 3 |
| Psych 101 Gen Psych 1 | 3 |
| Math 120 Intermed Algebra | 3 |
| H Ed 125 Intro Nutrition | 3 |
| Biol 136 Hum Anat and Physiol | 3 |
| Biol 139L Human Anat and Physiol Lab | 1 |
| H Ed 164 First Aid | 3 |
| H Ed 171 Per and Comm Hlth | 3 |
| PE 115 Women's Gymnastics or PE 117 Men's Apparatus Stunts | 1 |
| PE 273 Intro to Alth Trng | 2 |
| PE 289 Tests and Meas in PE | 3 |
| PE 231 Flickerball, Flag Football, Field Hockey, Basketball | 1 |
| PE 232 Golf, Folk Dance | 1 |
| PE 233 Soccer, Speedaway, Racquetball or PE 234 Volleyball, Track and Field | 1 |
| Communication arts elective | 3 |
| PE 284 Clinical Exp | 1 |
| | 35 |

SECOND YEAR

| | |
|---|---|
| PE 284 Clinical Exp | 2 |
| PE 217 PE in Elem Sch | 3 |
| PE 235 Personal Defense, Archery | 1 |
| PE 236 Tennis, Aerobics | 1 |
| PE 237 Softball, Team Handball, Badminton | 1 |
| PE 238 Wrestling or Mod Dance and Wght Trng | 1 |
| PE 245 002 Prof Lab Exp in PE | 2 |
| PE 277 Kinesiology | 3 |
| PE 288 Motor Lrng and Perform | 3 |
| Ed Fdn 290 Fdn of Ed | 3 |
| Multicultural studies | 3 |
| Biology minor | 8 |
| Psy 260 or 210 | 3 |
| Psy 220 Developmental Psych | 3 |
| | 37 |

THIRD YEAR

| | |
|---|---|
| PE 326 Physiol of Exercise | 3 |
| PE 373 Adv Ath Trng | 3 |
| PE 301 Tchg Team Sports | 2 |
| PE 310 Folk Dance in the Sch Prog | 2 |
| PE 444 Tchg PE 1 | 4 |
| PE 302 Tchg of Indiv and Dual Sports | 2 |
| PE 309 Tchg of Gymnastics | 2 |
| Lifesaving or equivalent | 1 |
| PE 107 Water Safety Instr or Certif | 2 |
| Human / Soc Sci | 3 |
| Biology minor | 6 |
| PE 484 Clin-Corr Thrpy Ath | 3 |
| | 33 |

FOURTH YEAR

§ PE 400 To be taken only if student desires elementary school certification.

| | |
|---|---|
| PE 461 Secondary Student Teaching | 9 |
| Human%Soc Sci | 3 |
| PE 378 Prin of PE | 3 |
| SATE 438 Tchg Rdg in Content Fld | 3 |
| PE 452 Org of Sports Prog | 3 |
| PE 466 Special P E | 3 |
| PE 479 Org and Admin of PE | 3 |
| PE 484 Clin Prog of Ath Trng | 3 |
| Biology minor | 3 |
| | 33 |

Following are requirements for certification by the National Athletic Trainers Association:

I. A college degree with a teaching license.
II. Completion of specific required courses:
1. Anatomy Biol (Biol 136, 139L)
2. Physiology (Biol 136)
3. Physiology of Ex (PE 326L)
4. Applied Anatomy and Kinesiology (PE 277)
5. Psychology (2 courses) (Psych 101 and 220)
6. First Aid and Safety (H Ed 164)
7. Nutrition (H Ec 125)
8. Remedial Exercises (PE 466)
9. Personal, Community, and School Health (H Ed 171)
10. Techniques of Athletic Training (PE 273)
11. Advanced Techniques of Athletic Training (PE 373)
12. Laboratory Practice (800 clock hours) (PE 484)

Majors in other fields may take the certification examination after completion of the above required courses.

**Option in Adapted Physical Education and Corrective Therapy**

FIRST YEAR

| | |
|---|---|
| Engl 101 Wrtg w / Rdgs in Exp or equivalent | 3 |
| Psych 101 Gen Psych 1 and | 3 |
| Psych 103L Gen Psych 1 Lab | 1 |
| Psych 102 Gen Psych 11 and | 3 |
| Psych 104L Gen Psych Lab 11 | 1 |
| Math 120 Intermed Algebra | 3 |
| H Ec 125 Intro Nutrition | 3 |
| Biol 136 Hum Anat and Physiol | 3 |
| Biol 139L Hum Anat and Physiol Lab | 1 |
| H Ed 164 First Aid | 3 |
| PE 115 Women's Gymnastics or PE 117 Men's Apparatus Stunts | 1 |
| PE 231 Flickerball, Flag Football, Field Hockey, Basketball | 1 |
| PE 232 Golf, Folk Dance | 1 |
| PE 233 Soccer, Speedaway, Racquetball | 1 |
| PE 234 Volleyball, Track and Field | 1 |
| PE 273 Intro to Ath Trng | 2 |
| PE 289 Tests and Meas in PE | 3 |
| Communication arts elective | 3 |
| | 37 |

SECOND YEAR

| | |
|---|---|
| Ed Fdn 290 Fdn of Ed | 3 |
| PE 217 PE in Elem Sch | 3 |
| PE 235 Personal Defense, Archery | 1 |
| PE 236 Tennis, Aerobics | 1 |
| PE 237 Softball, Team Handball, Badminton | 1 |
| PE 238 Wrestling or Mod Dance and Wght Trng | 1 |
| Psych 240 Physiol Psych | 3 |
| PE 245 002 Prof Lab Exp in PE | 2 |
| PE 277 Kinesiology | 3 |
| PE 288 Motor Lrng and Perform | 3 |
| Psych 331 Psych of Personality | 3 |
| Multicultural studies | 3 |
| Psychology electives | 3 |
| General education elective | 3 |
| | 33 |

THIRD YEAR

| | |
|---|---|
| H Ed 171 Per and Comm Hlth | 3 |
| Psych 260 Psych of Lrng or Psych 210 Educ Psych | 3 |
| PE 301 Tchg Team Sports | 2 |
| PE 310 Folk Dance in the Sch Prog | 2 |
| PE 445 Tchg PE 1 | 4 |
| PE 302 Tchg of Indiv and Dual Sports | 2 |
| PE 309 Tchg of Gymnastics | 2 |
| PE 445 Tch PE II | 4 |
| PE 106 Lifesaving or card | 1 |
| PE 107 Water Safety Ins or certification | 2 |
| Psych 220 Dev Psych | 3 |
| PE 326 Physiol of Exercise | 3 |
| PE activity electives (dance for 1) | 3 |
| | 34 |

FOURTH YEAR

| | |
|---|---|
| PE 479 Org & Adm PE | 3 |
| PE 461 Stud Tch Sec Sch | 9 |
| PE 466 Spec Phy Educ | 3 |
| PE 452 Org Sports Prog | 3 |
| SATE 438 Reading in Content Field | 3 |
| Psych 332 Abnormal Behav | 3 |
| PE Activity Elective | 1 |
| PE 378 Principles of PE | 3 |
| PE 467 Survey of Phy Def and Pathology | 3 |
| | 31 |

PE 484 Clinical Program for Corrective Therapy may not be taken as a undergraduate. This is part of your graduate program.

**NOTE:** Students will not be certified in Corrective Therapy until completion of Master's Degree in Adapted Physical Education.

The above curriculum includes a minor in psychology; however, a student may minor in special education.

**Non-Teaching Option: Exercise Technologist**

FIRST YEAR

| | |
|---|---|
| Eng 101 Wrtgw / Rdgs in Exp | 3 |
| Psy 101 Gen Psychology I | 3 |
| Math 120 Interm Algebra | 3 |
| H Ec 125 Intro to Nutrition | 3 |
| Biol 123L Biol for Hlth Related Sciences | 3 |
| Chem 111L Elem of Gen Chem | 3 |
| Chem 212L Integ Organic Chem and Bio Chem | 3 |
| PE 231 Flickerball, F.Football, field hockey, basketball | 1 |
| PE 232 Golf, Folk Dance | 1 |
| PE 233 Soccer, Speedaway, Racquetball | 1 |
| PE 234 Volleyball, Track & Fld | 1 |
| Electives: General Education | 3 |
| PE 102 Interm Swim | 1 |
| | 29 |

SECOND YEAR

| | |
|---|---|
| Sp Comm 130L Public Spk | 3 |
| Math 102 Intro Prob & Stat | 3 |
| Bio 237L Human Anat H Sc I | 4 |
| Bio 238L Human Anat H Sc II | 4 |
| H Ed 164 First Aid | 3 |
| PE 273 Intro Athl Trng | 2 |
| PE 289 Test & Meas in PE | 3 |
| PE 277 Kinesiology | 3 |
| PE 288 Motor Learning | 3 |
| PE 235 Tennis, Aerobics | 1 |
| PE 236 Personal Def, Archery | 1 |
| PE 237 Softball, Team Handball, Badminton | 1 |
| PE 238 Wrestling or Modern Dance & Wt Training | 1 |
| Elective General Educ | 3 |
| | 35 |

THIRD YEAR

| | |
|---|---|
| Psy 230 Psy of Adjustment or Psy 260 Psychology of Learning | 3 |
| EE 302 Clin Instrument | 3 |
| PE 326 Exercise Physiol | 3 |
| PE 470 Designs for Fitness | 3 |
| PE 391 Problems | 3 |
| PE 495 Field Exper | 6 |
| PE 160 Wt Training | 1 |
| PE 161 Dev PE and Wt Control | 1 |
| Electives General Education | 6 |
| H Ec 325 Interm Nutrition | 3 |
| | 32 |

FOURTH YEAR

| | |
|---|---|
| PE 378 Principles of PE | 3 |
| PE 467 Survey Phy Defects | 3 |
| PE 373 Adv Athl Trng | 3 |
| PE 391 Problem | 3 |
| PE 495 Field Experience | 6 |
| PE 152 Racquetball or PE 165 Yoga | 1 |
| PE 163 Aerobics | 1 |
| Electives General Education | 10 |
| | 30 |

Students must have American Red Cross or American Heart Association CPR certification prior to graduation.

**Major Study in Recreation**
**(Leading to the degree of Bachelor of Arts in Recreation)**

FIRST YEAR

| | |
|---|---|
| Engl 101 or 102 Wrtg w / Rdgs in Expos or Analytical Writing | 3 |
| Journ 251 News Wrtng or Eng 220 Expos Writing | 3 |
| Natural sciences electives | 6-8 |
| Recrea 175 Fdn of Recrea | 3 |
| Fine and practical arts elective | 3 |
| H Ed 164 First Aid | 3 |
| Psych 102 Gen Psych II | 3 |
| Recrea 290 Creat and Soc Arts for Recrea | 3 |
| Elective | 3 |
| | 30-32 |

SECOND YEAR

| | |
|---|---|
| H Ed 171 Per and Comm Hlth | 3 |
| Recrea 221 Recrea Leadership | 3 |
| Recrea 245 Field Work | 3 |
| Social science elective | 3 |
| Psych elective (200 level or above) | 3 |
| Recrea program option | 3 |
| Directed Recrea electives | 6 |
| Electives | 6 |
| | 30 |

THIRD YEAR

| | |
|---|---|
| Recrea 378 Outdoor Recrea | 3 |
| Sp Com 225 Prob Solv Groups or Sp Comm 221 Interpersonal Communication | 3 |
| Recrea 454 Dev of Recrea Prog | 3 |
| Recrea 495 Field Exper | 3-6 |
| Psych elective (200 level or above) | 3 |
| Social science elective | 3 |
| Fine and practical arts elective | 3 |
| Recrea program options | 3 |
| Rec 385 Spec Pop | 3 |
| Electives | 3 |
| | 30-33 |

FOURTH YEAR

| | |
|---|---|
| Recrea 495 Practicum | 3-6 |
| Recrea 480 Admin of Recrea Prog | 3 |
| Multicultural education | 3 |
| Social science elective | 3 |
| Recrea program option | 6 |
| Rec 407 Hist & Phil | 3 |
| Electives | 8-11 |
| | 29-35 |
| Total | 133 |

**Minor Study in Recreation**

| | |
|---|---|
| Recrea 175 Fdns of Recrea | 3 |
| Recrea 290 Creat and Soc Arts for Recrea | 3 |
| Recrea 301 Rec Spts or PE 217 PE in Elem Sch | 3 |
| Recrea 221 Recrea Leadership | 3 |
| Recrea 245 Prof Lab Exper in Recrea | 3 |
| Recrea 454 Dev of Recrea Prog | 3 |
| Recreation electives | 6 |
| | 24 |

**General Education**

Students must develop a written plan of study for genera education in consultation with an adviser from the recrea tion program, Department of Health, Physical Educatior and Recreation. This plan must satisfy the following requirements:

| | |
|---|---|
| Behavioral science<br>Psych 102 (Gen Psych II) (3)<br>plus 6 hours of Psych electives (200-level or above) | 9 hour |
| Communicative arts<br>Eng 101 or 102<br>Sp Com 130 (Public Spkng)(3) or<br>Sp Com 221 Interpersonal Comm or<br>Sp Com 225 (Group Prob Solv)-(3)<br>Journ 251 News Writing or<br>Eng 200 (Expository Writing) (3) | 12 hour |
| Fine and practical arts | 6 hour |
| Natural sciences | 6 hour |
| Social sciences | 9 hour |

| | |
|---|---|
| Health education or physical education | |
| H Ed 171 Personal & Comm Health | 3 hours |
| Multicultural education | 3 hours |
| Total | 48 hours |

## Home Economics

**Major Study in College of Education Curriculum for Students Preparing To Teach Home Economics**

This curriculum leading to a degree of Bachelor of Science in Home Economics Education is designed to prepare the student to teach home economics in mid-school, junior, and senior high schools, for home economics extension work, home economics in social services, and for a career in home economics in business. The curriculum is approved by the State Department of Vocational Certification.

Forty hours of required home economics subject matter is required for a major with a minimum of 24 hours in a teaching minor. A 54-hour home economics major without a required minor is recommended for those planning to teach in secondary school. *Students must seek advisement when planning their major and minor.*

**Home Economics Education**

Major Study in College of Education. Curriculum for Students Preparing to Teach Home Economics.

| FIRST YEAR | |
|---|---|
| Anth 130 Digging Up Our Past or Soc 101 Intro to Soc | 3 |
| Communication electives | 6 |
| Psych 102 Gen Psych II | 3 |
| Biol 136 Hum Anat / Phy - Non majors | 3 |
| H Ec 101 Freshman Sem (Fall) | 2 |
| H Ec 102 Infant Gwth and Dev | 3 |
| H Ec 120L Food Science | 3 |
| H Ec 150L Clothing Const | 2 |
| *Restricted electives | 3 |
| General Ed electives | 6 |
| | 34 |

| SECOND YEAR | |
|---|---|
| General Ed electives | 9 |
| Hum, Math, HPER or Lang | 3 |
| Econ 200 Prin & Prob 201 Prin of Econ | 3 |
| Communication elective | 3 |
| Art Ed 130 Tech of Design (Fall) | 3 |
| Ed Fdn 290 Fdn of Ed | 3 |
| H Ec 125 Intro Nutrition | 3 |
| H Ec 250 Clothing & Human Behavior (Spring) | 2 |
| H Ec 252 Textiles | 3 |
| H Ec 218 Marriage and Pers Dev | 3 |
| | 35 |

| THIRD YEAR | |
|---|---|
| General Ed electives | 6 |
| Multicultural elective | 3 |
| Ed Fdn 310 Lrng & Classrm | 3 |
| H Ec 341 House and Its Environ | 3 |
| H Ec 443 Family Decision Making (Fall) | 3 |
| H Ec Ed 437 Tchg of H Ec (Spring) | 3 |
| H Ec 444 Family Finance (Spring) | 3 |
| H Ec Ed 361 Pre-Stu Tchg in H Ec (Spring) | 3 |
| Electives (minor or major) | 3 |
| General Ed electives | 3 |
| | 33 |

| FOURTH YEAR | |
|---|---|
| SATE 438 Rdg in Content Fld | 3 |
| H Ec 408L Gwth & Dev of Presch Child | 3 |
| H Ec 418 Family Relationships | 3 |
| Electives (minor or major) | 9 |
| H Ec 445L Home Management Lab | 4 |
| H Ec Ed 461 Stu Tchg in Sec Sch | 6 |
| H Ec Ed 465 Seminar: Voc H Ec Ed | 3 |
| | 31 |

**Curriculum for Students Preparing for Nutrition/Dietetics**

The curriculum leading to a Bachelor of Science in Home Economics—Nutrition / Dietetics is designed to provide students with the academic requirements necessary for membership in the American Dietetics Association. Following successful completion of the undergraduate degree, students will need additional training via a dietetic internship or master's degree to become eligible for status as a registered dietetian. In order to be competetitive for additional training, it is recommended that undergraduate students maintain a minimum GPA of 3.0 and have work experience in an area related to nutrition / dietetics.

Students are required to declare a minor field of study. The minor is subject to department approval. A double major in home economics education / nutrition-dietetics is available. Students should seek advisement for program planning.

**Home Economics/Nutrition-Dietetics**

| FIRST YEAR | |
|---|---|
| H Ec 101 Freshman Seminar | 2 |
| H Ec 102 Infant Gwth and Dev | 3 |
| H Ec 120L Food Science | 3 |
| Chem 111L Elem Gen Chem | 4 |
| Biol 136 Hum Anat and Physiol | 3 |
| Biol 139L Hum Anat and Physiol Lab | 1 |
| Math 120 Intermed Algebra | 3 |
| Anth 130 Cultures of the World | 3 |
| Soc 101 Intro Sociology | 3 |
| Psych 102 Gen Psychology | 3 |
| Sp Comm 221 Interpers Comm | 3 |
| | 31 |

| SECOND YEAR | |
|---|---|
| H Ec 125 Intro Nutrition | 3 |
| H Ec 222L Meal Management | 3 |
| Chem 212 Integ Org and Biochem | 4 |
| Biol 239L Microbiology | 5 |
| Econ 200 Prin & Prob or Econ 201 Prin of Econ | 3 |
| Engl 320 Technical Writing | 3 |
| H Ec restricted elective | 3 |
| Electives (approved minor) | 6 |
| Math 102 Statistics | 3 |
| | 33 |

| THIRD YEAR | |
|---|---|
| **H Ec 325 Adv Nutrition | 3 |
| **H Ec 427L Quality Food Prod | 3 |
| **H Ec 431L Exp Foods | 3 |
| ASM 202 Prin of Finan Acctg | 3 |
| ASM 361 Organizational Theory | 3 |
| Anth 388 Human Genetics | 3 |
| H Ec restricted electives | 6 |
| Electives (approved minor) | 6 |
| Multicultural electives | 3 |
| | 33 |

| FOURTH YEAR | |
|---|---|
| **H Ec 434 Organization and Mgmt | 3 |
| **H Ec 428 Diet Therapy | 3 |
| H Ec Ed 437 Tchg of H Ec (spring) | 3 |
| **H Ec nutrition electives | 6 |
| Biol 429 Cell Physiol and Biochem | 4 |
| Electives (approved minor) | 9-12 |
| H Ed 471 Intro Comm Hlth | 3 |
| | 31-34 |

**Major Study in Arts and Sciences.** A major study in home economics in the College of Arts and Sciences prepares the student for a career in home economics in business or in the home.

This curriculum would be a minimum of 34 hours in home economics. The student will select six hours in each of the following four areas:

1. H Ec 120L, 125, 222L, 325, 326L
2. H Ec 150L, 250, 252, 254L, 456L
3. H Ec 101, 102, 218, 318, 408L, 418, 468
4. H Ec 244, 341, 443, 444, 445L

Ten additional hours approved by the student's adviser in home economics. Twelve of the 34 hours must be upper division.

**Minor Study.** A minor study consists of a total of 24 hours, at least 9 hours numbered above 300, chosen from the following four areas and from the following courses:

1. Family relations and child development, 6 hours: H Ec 102, 218, 318, 408L, 418, 468.
2. Clothing and textiles, 6 hours: H Ec 150L, 250, 252, 254L, 456L.
3. Foods and nutrition, 6 hours: H Ec 120L, 125, 222L 325.
4. Housing, home furnishings, and home management, 6 hours: H Ec 244, 341, 443, 444.

Any substitutions must be approved by the Chairperson of the Department.

**Food Service Management.** (Tourism, hospitality, hotel, and restaurant industries) Eligible students wishing to include in their bachelor's degree work preparation for careers in the field of hotel, motel, restaurant, tourism, and recreation industries may enroll in selected courses already being offered in management; computing and information science; economics; home economics; health, physical education, and recreation; and speech. Such courses may be used toward the Bachelor of University Studies or in some cases may be used as electives toward other bachelor's degrees now being offered at the University.

Courses now available closely related to career goals in these occupational clusters are listed below. See the department for detailed advisement and planning.

H E 125 Nutrition (3)

H Ec 427 Large Quantity Food Production (3)

H Ec 434 Organization and Management—Food Service (3)

H Ec / Recrea 495-496 Directed Studies—Field Work, Internships

Recrea 311 Man and Leisure (Education for Leisure)(3)

Recrea 378 Outdoor Recreation (3)

HPER 493 Tourism and Recreation(3)

## Industrial Education

See p. 44 for information about programs in industrial education.

## Music Education

**NASM Membership**

The University of New Mexico is a member of the National Association of Schools of Music. Requirements for entrance and for graduation as set forth in this catalog are in accordance with the published regulations of the National Association of Schools of Music.

**Curriculum for Students Preparing to Teach Music in Grades 1-12 (128 Hours)**

(Leading to the degree of Bachelor of Music Education) See pp 56

**Minor in Music Education**

Students may also minor in music education. See p 57 for minor requirements.

## PHYSICAL EDUCATION

See Health, Physical Education and Recreation.

## Secondary and Adult Teacher Education

**Statement of Purpose and Objectives**

The Department of Secondary and Adult Teacher Education is deeply involved in developing quality educational programs for all youth and adults. This effort is a cooperative endeavor with the New Mexico State Department of Education and the schools of New Mexico. In order to help achieve the goal of quality education, the Department carries on three major programs:

1. The preparation of teachers in curriculum areas of the secondary schools, culminating in a bachelor's degree.
2. Post-bachelor's education for teachers of adolescents and adults in appropriate areas of curriculum and instruction, usually culminating in a master's degree.
3. A program of educational research in the theory and practice of adolescent and adult education led by members of the Department working with outstanding educators who are pursuing advanced graduate programs leading toward educational specialist certification or doctoral degree.

**Undergraduate Program.** The undergraduate program of the Department is based on a broad general education. Beyond this general education, the program involves both pursuit of knowledge in areas of study in which students propose to become competent to teach and experiences and course work in foundations of education, curriculum, and instruction. The Department conducts programs

*Restricted electives: 3 hours in one of the following: Foreign Language, Humanities, Mathematics, HPER, Fine Arts & Engineering.

**Course offered alternate years.

***See adviser.

through three major subdivisions: business education, curriculum and instruction, and industrial education.

**General Education.** To meet the general education requirements in secondary and adult teacher education, students will complete a minimum of six semester hours in each of four of the ten areas of study specified by the College of Education (see p 38 and three semester hours in each of two additional areas. In addition to the above 30 hours, 18 additional hours must be selected with the adviser's approval. It is strongly recommended that multiculturalism be one of the areas represented in the general education component.

**Departmental Programs.** The following curricula, leading to the bachelor's degree, are designed for students preparing to teach in middle schools, junior high schools, or senior high schools. For graduation from the College of Education through this Department, the candidate must have successfully completed, in conformity with the regulations prescribed for the several major and minor concentrations, not less than one departmental major concentration and one departmental minor concentration (except in the composite teaching areas and industrial education). These concentrations shall total at least 51 semester hours of credit.

Bachelor's degree programs in business education and industrial education are offered by the Department. The Associate of Arts in Secretarial Studies and Office Supervision (which does not result in teacher certification) and minors in business education are also offered.

Available **only** to students in the College of Education are majors in mathematics education, bilingual education, teaching English to speakers of other languages, and composite majors in social studies, science, and communication arts in secondary education. Minors are available in bilingual education, teaching English to speakers of other languages, and teaching of reading in the secondary schools.

Most majors and minors offered by departments of the College of Arts and Sciences and approved for certificate endorsement by the New Mexico State Department of Education may be used as majors and minors for graduation from the College of Education through this Department.

Acceptable as major or minor concentrations are: biology, chemistry, English, French, geography, geology, German, history, mathematics, physics, political science, psychology, sociology, Spanish, speech communication, and theatre arts.

Acceptable as **minor** concentrations only are: anthropology, economics, journalism, Latin, library science, and special education.

All students who wish to elect teaching major and minor concentrations not listed above will consult with the Chairperson of the Department of Secondary and Adult Teacher Education for detailed information and requirements.

Because degree minors and certain patterns of course work in degree majors do not always meet certification requirements, students' programs must be approved by an adviser in the Department of Secondary and Adult Teacher Education. No minor of less than 24 hours, for example, will suffice for certification.

*Any student wishing to be certified in any of the above majors or minors must be admitted to secondary teacher education before the semester in which he%she enrolls in 300-level professional education courses.*

**Professional Sequence**

The following professional sequence is required of all students working toward certification through this Department.

*Ed Fdn 290. Foundations of Education,* 3 semester hours. May be taken prior to admission to secondary teacher education.

*Pre-Student Teaching.* This consists of a 12 semester hour block including SATE 361, 438 Ed Fdn 303, and Ed Fdn 310. Requirements include several hours of observation and classroom work in schools.

*Student Teaching Preparation and Internship.* Full time student teaching for at least one semester is required as defined by each SATE program

Overall, the secondary teacher professional sequence may require from two to four semesters. Students are urged to consult an adviser in the Department of Secondary and Adult Teacher Education as early in their college career as possible.

**Certification Requirements**

Successful completion of departmental requirements prepares the graduating senior for application for a four-year, provisional secondary, teaching certificate issued by the New Mexico State Department of Education. Students planning to teach in other states should insure that the Department's program meets the requirements of those states. Certification beyond the four-year provisional certificate depends upon experience and additional academic and professional course work.

Persons already holding a bachelor's degree who wish secondary or vocational certification should consult with the department chairperson about available programs. Students who are working toward degrees through colleges other than the College of Education and who expect to gain certification in the teaching areas under the jurisdiction of this Department are subject to the same regulations as students in the College of Education.

**Majors and Minors Offered by the Department**

**Composite Teaching Areas**

The composite major in a teaching area is designed to enable the prospective teacher to acquire unified learning within a broad field of closely related subject matter disciplines which would not be possible in a single-subject-matter major teaching area.

The application of this unified knowledge to the teaching of currently unified or generalized secondary school subjects (e.g., communication arts, general science, social studies) is an avowed purpose of this form of preparation.

The composite is also designed to prepare students to teach adequately in several closely related subjects. This type of preparation will be of particular advantage to novice teachers beginning their careers in small secondary schools in which they must expect multiple rather than single subject teaching assignments. The composite majors are available only to students pursuing a degree through the College of Education. No minor is required for the composite major.

COMPOSITE IN COMMUNICATION ARTS IN SECONDARY EDUCATION. The composite major consists of at least 54 hours of interdisciplinary study including course work in each of these areas: linguistics, English, communication arts, and cultural diversity.

Since the composite contains 24 hours of English, students are strongly urged to add 9 hours of work in English courses to complete a regular English major, meeting the requirements of the English Department.

No minor is required with the communication arts composite major, but it is strongly recommended that students add a second teaching field of at least 24 semester hours in a related area such as reading, teaching English to speakers of other languages, speech, drama, journalism.

COMPOSITE IN SCIENCE. The composite major in science shall consist of at least 54 hours in the broad fields of science and mathematics. No minor is required, but one is strongly recommended. Three areas of concentration are available in the composite major:

*Physical Science.* This program requires 8 hours of Math 162 and above, 30 hours selected from the combined areas of physics and chemistry (a minimum of 11 hours from each field). Courses in industrial education may be selected with consent of adviser. The balance of the 54 hours may be selected from chemistry, physics, mathematics, geology, astronomy, or biology. Eight hours of biology are recommended.

*Earth Science.* This program requires 8 hours of Math 162 and above, 3 hours of astronomy, 8 hours of chemistry, 11 hours of physics (including 103), geography 351, and 20 hours of geology. The balance of the 54 hours will be selected from any of the areas above or from biology.

*Life Science* This program requires 4 hours of mathematics, 8 hours of chemistry, 24 hours of biology. Six hours may be selected from Anthro 307L, Psych 240 and 441. The balance of the 54 hours may be selected from chemistry, physics, or geology.

COMPOSITE IN SOCIAL STUDIES IN SECONDARY EDUCATION. The composite major in general social studies shall consist of at least 54 hours, including freshman courses, of which at least 24 hours must be in the Department of History, including two courses in United States history and two courses in European or world history; 9 hours in the Departments of Political Science or Economics; 12 hours in the Departments of Anthropology, Geography, Philosophy, or Sociology; and 9 hours in electives from these departments. A minor is strongly recommended.

**Other Majors and Minors**

BILINGUAL EDUCATION. Students interested in the major or the minor in bilingual education should consult the departmental adviser at an early time in their university career. The programs require proficiency in English and another language, two certifiable teaching fields, and intensive study in bilingual education.

BUSINESS EDUCATION. Business education programs offer two curricula which lead to the Bachelor of Science in Education and teacher certification; the comprehensive curriculum, which may include vocational office education, and the general curriculum. Graduates are certified to teach business subjects in the junior high school, the mid-school, and the secondary school; however, many are prepared as well for positions in post-secondary or technical-vocational institutes and private business schools.

In general, business teacher education students must complete a teaching major in business subjects, a teaching minor, 27 hours of professional education courses, and 48 hours of general education requirements.

The first-year student in one of the business teacher education programs may follow the associate of arts degree program in secretarial studies and office supervision with the following exceptions: during the first year, the students should: (1) enroll in 6 hours of a natural science; (2) enroll in Speech Communication 270, Speech Communication for Teachers; and (3) start the Gregg shorthand sequence.

Complete information on the above programs may be obtained from a business education adviser. Students who have had typewriting or shorthand prior to enrollment at UNM should see an adviser in business education for proper placement in these sequences.

The student who wishes to minor in business education (comprehensive) must take Bus Ed 253 and 262 and 18 additional hours in business education, economics, and management.

The student who wishes to minor in BusinessEducation (general business) must take Bus Ed 262, Mgt 101, Mgt 102, and 15 additional hours of courses in business education, economics, and management.

INDUSTRIAL EDUCATION. This curriculum, leading to the degree of Bachelor of Science in Industrial Education, is primarily designed to prepare persons to teach industrial arts in mid-, junior, and senior high schools. Minimum requirements for the industrial education major are met with completion of 54 semester hours of technical course work. The major contains a core of lower division courses and an upper division program. All students in industrial education are required to complete the core courses and, with the approval of an industrial education adviser, to select and complete an upper division program.

In addition to the industrial education major, candidates must complete professional and general education requirements. The professional education requirements are met with successful completion of 27 prescribed semester hours. General education requirements are met with a minimum of 48 approved semester hours. The program of studies in general education consist of 20 semester hours of prescribed courses, 18 semester hours of course work in prescribed areas, and 10 semester hours of free electives.

The student interested in pursuing a degree in industrial education should contact the Industrial Education Program for a list of required and recommended courses to be taken in the general education, professional, and technical major areas. Intended majors should meet with an industrial education adviser after completion of six (6) hours in industrial education core courses for the purpose of planning a tentative program of studies. Before a student officially becomes an industrial education major, he/she must be admitted to, and enrolled in, the College of Education.

MATHEMATICS EDUCATION. Students who propose to major in mathematics education are required to plan a program which will enable them to develop proficiencies in the following areas of mathematics: calculus, algebra, geometry, probability and statistics, computing, applications of mathematics, and history of mathematics. In addition to the required areas, students will be encouraged to develop proficiency in other areas of mathematics, such as topology, number theory, and advanced analysis. A variety of means (e.g., course work, field experiences, independent

study) may be appropriate for individual programs. *Students must meet with an adviser in Secondary Education as soon as possible to plan their program.* The aim is to develop a program such that the various components (general education, mathematics, professional education, electives) will enchance each other and other activities of the student so as to provide an integrated series of experiences which will serve as the basis of a successful career in education.

MINOR IN TEACHING OF READING IN SECONDARY SCHOOLS. Students minoring in teaching of reading in secondary schools must pursue a major in another certifiable teaching field. The minor in teaching of reading in secondary schools consists of 24 semester hours which include: reading in the secondary schools, elementary reading programs, diagnosis of reading; remedial reading, reading in content areas, and practicum. Candidates for admission into the minor should apply for special screening at the time they apply for admission into the College of Education.

MAJOR AND MINOR IN TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES. The major consists of a minimum of 36 hours of interdisciplinary study which includes 12 hours of a second language (preferably Spanish or a Native American language) and courses in linguistics, English, and professional education. The minor consists of 24 hours of interdisciplinary study which includes 6 hours of a second language (preferably Spanish or a Native American language) and courses in linguistics, English, and professional education.

A student may elect to work toward certification in teaching English to speakers of other languages under the broad field concept, it is recommended that the student then augment the major of 36 hours with 21 additional hours in foreign language and English for a total of 57 semester hours.

ASSOCIATE OF ARTS DEGREE IN SECRETARIAL STUDIES AND OFFICE SUPERVISION. Students admitted to any business education program should consult with an adviser for proper placement and credit before enrolling in skill courses Bus Ed 111, 112, 113, and 114, and for selection of appropriate courses and electives.

| First Semester | |
|---|---|
| Bus Ed 112 Interm Typing | 3 |
| Bus Ed 113A Shorthand Theory (Gregg) or Bus Ed 113B Shorthand Theory (Forkner) | 3 |
| Engl 101 Wrtg w / Rdgs in Expos | 3 |
| Sp Com 101, 130, or 270 | 3 |
| *Math elective | 3 |
| Elective | 1 |
| SATE 371 &372 Voc Instruct Implementation | 3+3 |
| | 22 |

| Second Semester | |
|---|---|
| Bus Ed 114 Shorthand Dict (Gregg and Forkner) | 3 |
| Bus Ed 262 Adv Typing | 3 |
| Engl 102 Analytical Wrtg | 3 |
| Hist 101 or 102 Western Civilization | 3 |
| Electives | 4 |
| SATE 371 & 372 Voc. Inst. Implementation | 3+3 |
| | 22 |

| Third Semester | |
|---|---|
| Bus Ed 117 Off Mach and Filing | 2 |
| Bus Ed 253 Shorthand Trans (Gregg / Century 21) | 3 |
| *Bus Ed 201 Intro to Data Proc | 3 |
| Econ 200 or 201 Prin and Prob | 3 |
| Electives | 5-8 |
| | 16-19** |

| Fourth Semester | |
|---|---|
| Bus Ed 257 Secretarial Adm | 3 |
| Bus Ed 265 Business Comm | 3 |
| Bus Ed 350 Voc Off Lab and / or electives | 7 |
| Mgt 201 Secretarial Acctg | 3 |
| | 16 |

Required for graduation: 64 semester hours. Four hours of nonprofessional physical education may be elected.

**Graduate Courses**

See course listing under Education, Secondary and Adult Teacher. For program, see department Coordinator of Graduate Studies and / or Assistant Chairperson for Business Education or Industrial Education.

## Special Education

**Minor Program of Studies**

The Department of Special Education requires a minimum of twenty (20) hours in the noncertification minor program of studies. This includes 17 hours of required courses and one elective to be chosen by the student. Students are encouraged to take additional courses in the Department, particularly if they plan to enter a graduate program in special education or if their major field requires a minor of more than 20 hours.

The following courses are required for all students with a minor in special education:

Sp Ed 201 Education of the Exceptional Person
Sp Ed 204 Introduction to Special Education
Sp Ed 408 Special Education in the Regular Class
Sp Ed 306 Introduction to Behavior Management
Sp Ed 409 Affective Education and Exceptional Persons
Sp Ed Nature and Needs course

One of the four Nature and Needs courses (Mentally Retarded, Learning Disabled, Behaviorally Disordered, or Gifted) are required. Students will be encouraged to take the course that will cover the particular area of exceptional children in which they are interested or intend to study at the graduate level. They may take more than one Nature and Needs course if they so desire. To complete the requirements for a minor, students may select any other undergraduate course in the Department of Special Education.

Students should plan to take minor coursework during the regular academic year since most of these courses are not offered during the summer.

The Department of Special Education does not offer a major or certification program at the undergraduate level.

**Requirements**

Students must earn a grade of B or better in Special Education 201 and 204 (must be taken concurrently) and must have a minimum overall GPA of 2.0 prior to acceptance into the minor in special education. Those students wishing to minor in special education must be screened and endorsed by the Department of Special Education. Upon screening into the program, a student will be assigned an adviser who will assist in the preparation of the minor program of studies (contract). This contract must be on file in both the major and minor departments.

In order to remain in the Department as a minor, a student must maintain a B average in all special education courses. A grade of D in any special education course will not be accepted toward the minor program.

***Screening***

Applicants must contact the Special Education Graduate Secretary for screening information

* Prerequisite for MGT 201

# COLLEGE OF ENGINEERING

ENGINEERS are problem solvers, creators, and builders. They direct their imagination, ingenuity, resourcefulness, and intelligence to the economical use of our natural resources. Few professions offer individuals greater challenge, stimulation, and satisfaction of creative accomplishment. In these days, when breathtaking technological advances are commonplace and the impacts of technology are widely recognized, engineers require ever greater breadth and depth of mathematical and scientific cognition, combined with a sympathetic appreciation of social, economic, ecological, and human values. Engineers are not only the couplers of science and mathematics into human needs; they also are managers of people, resources, and machines in effecting the satisfaction of these needs.

The College seeks to educate persons as engineers who are readily employable, who contribute significantly in their jobs, have substantial emotional satisfaction, have a strong public responsibility, and continue to learn. It also seeks to meet continuing education needs of post-baccalaureate engineers and others who need to extend or strengthen their engineering capabilities.

The several curricula of the College of Engineering are designed to give students suitable education, attitudes, and motivations for their entry into successful careers as practicing engineers, administrators, researchers, or educators. The undergraduate programs are solidly founded on mathematics and the natural sciences, with additional emphasis placed upon human values and relations. This broad grounding is in itself not sufficient, however, these curricula strive to develop the beginnings of sound judgment, perspective, and a penetrating curiosity. Many graduates continue their formal education at the post-graduate level and work toward master's or doctor's degrees. Students must realize, however, that education does not stop with college graduation. More accurately, that is just the first phase of education. True professional engineers never stop learning; they are continually broadening their intellectual horizons. One indication of continued growth and development is registration as a professional engineer. Every state has established criteria of education and experience which must be met before an engineer can achieve this status.

Students in the College of Engineering have opportunities for scholarly study, laboratory exercise, and research participation. They may interact with nationally recognized engineers. The University of New Mexico strongly believes that engineering teachers must be competent engineers in their own right; faculty members are encouraged to participate actively in professional practice and research. This experience keeps the faculty involved with new developments, increases their understanding of subjects taught, and gives students the benefit of their findings and personal experiences. Faculty and students work side by side in research and instructional laboratories.

The College of Engineering maintains the Bureau of Engineering Research, which provides administrative support for faculty research projects, and the New Mexico Engineering Research Institute, which performs research relating to structures, soils, blasts, instrumentation, and energy matters.

### High School Preparation

It is important that high school students wishing to pursue professional engineering studies at The University of New Mexico orient their subject selection in the proper directions at the earliest possible moment. Students properly prepared will be able to follow the regular pattern of studies without the necessity of making up scholastic deficiencies. Students inadequately prepared in mathematics or English are required to take remedial work for no credit to remove these subject deficiencies. Students who score 25 or above in the English area of the ACT are excused from Engl 101 (3 hours); those who are placed in Math 163 are excused from Math 162 (4 hours).

High School students intending to study engineering should take all of the high school mathematics and English possible as well as chemistry and physics. The mathematics should include a minimum of 2 units of algebra, 1 unit of geometry, and 1/2 unit of trigonmetry or college-preparatory mathematics.

## Admission

All freshman students are admitted to the University College.

A detailed statement of entrance requirements to University College is in the Admission and Registration section of this catalog. All freshman engineering students, during their residence in University College, take the prescribed freshman engineering course of study as set forth on p 47.

### Admission to the College of Engineering

To be eligible for admission to the Engineering College from the University College, from other degree-granting colleges or from other accredited institutions, the student must meet the following requirements:

Completion of 26 hours of acceptable credit for a degree in the College of Engineering. Of these 26 hours of credit, at least 18 must be from the courses required in the freshman year, excluding English, humanities and social science courses.

In addition to requiring a 2.0 average for all courses presented, it is required that the 18 credits also yield at least a 2.0 average.

A transfer student from another university who does not meet the above requirements for acceptance in the Engineering College may be eligible to enroll in the University College to make up any deficiencies in admission requirements. If a transfer student is ineligible to enroll in the University College, when a total of 64 credits have been earned, the student should seek advisement in the Engineering Advisement Office.

### Academic Advisement

Academic advisement is required for all students who plan to complete bachelor's degree requirements in the College of Engineering. The Engineering Advisement Office is located in the Farris Engineering Center, room 329. Each student is responsible for meeting prior to registration with the assigned academic adviser in his/her major field.

### Probation

A student enrolled in the College of Engineering will be placed on academic probation under either of the following conditions:

1. A cumulative grade point based on all work taken at UNM falling below 2.0.
2. A cumulative grade point based on all work taken at UNM acceptable for the particular degree falling below 2.0.

### Suspension

Any student who does not earn sufficient grades at the end of any regular semester or summer session to be removed from academic probation at the end of that semester or session will be subject to either College of Engineering dismissal or University suspension, according to that student's overall scholarship index.

Students who are either dismissed from the College of Engineering or suspended from the University may not apply for readmission to the University or the College of Engineering for a minimum period of one calendar year from the date of Engineering College dismissal or University suspension.

Students under College of Engineering dismissal may not be permitted to register for courses in the College of Engineering while under College of Engineering dismissal.

## Courses of Study

**FOUR-YEAR PROGRAMS.** The College of Engineering is a member of the American Society for Engineering Education. The curricula in chemical, civil, computer, electrical, and mechanical engineering are accredited by the Engineer's Council for Professional Development.

The College of Engineering offers the degrees of Bachelor of Science in Chemical Engineering, Civil Engineering, Computer Science, Electrical and Computer Engineering, Mechanical Engineering, and the Bachelor of Engineering. These four-year curricula are designed for students who enter without deficiencies and who are capable of carrying the required scholastic loads indicated under the respective departmental programs. Otherwise, students should anticipate more than eight regular semesters to complete requirements for their degree.

**Options and Special Fields.** In addition to the five major professional fields of study listed above, in which the bachelor of science degree is offered, three options are currently available in the bachelor of engineering program. These three options are: biomedical engineering, energy and power systems, and nuclear engineering. It is expected that in the future additional options will be available within the bachelor of engineering degree program, hence, the student should consult with the Engineering Advisement Office. In addition, it is possible to specialize by choosing appropriate elective courses within the basic curriculum of one of the major departments.

**Courses Offered upon Demand.** Engineering departments attempt to schedule courses listed in the **Bulletin** as "offered upon demand" so as to satisfy student needs. Students may present a petition for a specific departmental course for consideration by the chairperson, at least two weeks before the beginning of open registration. This petition is to include the names of those students who will enroll.

**Degree in Combination with Other Colleges.** If students wish to secure a degree in another college together with their engineering degree, they are urged to seek advice early in their college careers from the deans of the colleges concerned. With care in selecting their program of studies, it is possible for students to secure two degrees in one additional year.

**Aerospace Studies, Naval Science.** Students enrolled in the Air Force ROTC or the Naval ROTC can complete their degree program in four years. However, students may need an extra semester to complete the requirements for both a degree and a commission. Students should consult the department chairperson concerned in planning their program.

**Special Programs.** The College of Engineering recognizes that the role of minorities and women in the engineering profession is expanding and that role in New Mexico is particularly important. To encourage this expansion, the College of Engineering has instituted the Native American Program in the College of Engineering (NAPCOE), the Hispanic Engineering Program (HEP), and the Engineering Program for Women (EPW). Each program provides opportunities for students to meet others having the same interests, opportunities, and problems. These programs help students obtain scholarships, provide personal and academic counseling and offer class work tutoring.

Students interested in further information about NAPCOE, HEP, or EPW are encouraged to contact the appropriate program director through the College of Engineering Dean's Office.

**Cooperative Education Program.** The College of Engineering offers a cooperative education program (Co-op) for students majoring in any field in the College of Engineering. The Co-op curriculum is a five-year work-study program that alternates a semester of full-time academic study with a semester of full-time employment in industry. Co-op students gain industrial experience that provides career guidance and makes academic study more meaningful. Co-op students earn a substantial part of their educational expenses from the high salaries of the Co-op jobs.

Students interested in the Co-op Program may apply to the Engineering Co-op Director soon after being admitted to the University. Co-op students normally must finish the first semester of the freshman year with at least a 2.5 grade average before beginning interviews for a Co-op job with industry. To begin a Co-op Work Phase, the student must have completed at least two semesters at the University of New Mexico carrying a full-time load and have completed the normal first semester freshman curriculum. A transfer student from some other university or college shall become eligible for the Co-op Program upon completion of 15 hours in a Degree Program in the College of Engineering. To remain in the Program, the student must maintain a minimum 2.2 GPA, and otherwise be in good standing, in a Degree Program in the College of Engineering.

While on each work phase Co-op students must register for Engineering Co-op 105 and pay a small fee. This registration maintains student academic status, including eligibility for dormitory, activity card, library, and insurance. After completing each work phase, the Co-op student registers for one of the engineering courses, Evaluation of Co-op Work Phase, for one credit hour. A maximum of six hours of academic credit earned from the Co-op work phase may

counted as technical elective credit toward the student's engineering degree with the approval of the major chairperson.

**Graduate Study.** A program of graduate studies is offered by the College of Engineering leading to the Master of Science in Chemical Engineering, Civil Engineering, Computer Science, Electrical and Computer Engineering, Mechanical Engineering, and Nuclear Engineering. A fifth year of study leading to the master's degree is strongly recommended for students of good academic ability.

A program of graduate study in **mechanics** is offered jointly by the Departments of Civil and Mechanical Engineering. Graduate students should consult the engineering departmental listings in the Graduate Programs Bulletin for additional information on computer study options available in that department. Descriptions of the computer and computer related courses offered by the several engineering departments will be found in the Courses of Instruction section of this catalog.

The College of Engineering offers through the Office of Graduate Studies a program leading to the degrees of Doctor of Philosophy in Engineering and Doctor of Philosophy in Computer Science. Study concentrations within the doctorate may be pursued in a variety of engineering and computer science fields. Consult the current Graduate Programs Bulletin for details of these programs.

**Scholastic Regulations.** The student should become familiar with the general academic and scholastic rules which apply to all students enrolled in the University (see p 24 ). Special attention is called to the rules on probation and suspension of the Engineering College (see p. 46.

**Courses Numbered 300 or Above.** Students may be admitted to courses numbered 300 or above in the College of Engineering if: (1) they are not more than 8 hours short of completing all freshman and sophomore requirements, (2) they have completed all prerequisites for the course in question, (3) the remaining lower-division requirements appear on their program, or (4) they obtain approval from the Dean of the College. If a student fails a required lower-division course while enrolled in a 300-level course, the student will not be eligible to enroll in additional 300-level courses until all required freshman and sophomore courses have been completed.

The College of Engineering will not accept 300-level or above engineering courses which have been taken by extension or correspondence.

**Maximun Semester Hour Load.** The maximum semester hour load for students in the College of Engineering is 20 hours, including physical education. Only in exceptional cases and with approval of the Dean of the College will a student be permitted to carry 21 or more hours.

## Graduation Requirements

Specific graduation requirements are as follows:

1. Candidates for the bachelor's degree in any of the engineering majors must complete all of the work outlined in their respective curricula. *The student is solely responsible for completing all requirements for graduation.*
2. Students must file applications for degree with their major chairperson during the second semester of their junior year, but in no case later than when they have completed 100 semester hours acceptable toward the degree.
3. Each candidate for a degree must have at least a 2.0 grade-point average on work taken at The University of New Mexico which is counted toward graduation. Three-fourths of the semester hours offered toward a degree must be of C grade or better.
4. For minimum residence requirements, see p. 27.
5. If a beginning student is placed in Math 163 because of high ACT scores in that area and completes the course with a grade of C or better, the hours required for graduation may be reduced by four.
6. If a student is placed in Engl 102 because of high ACT scores in that area and completes the course with a grade of C or better, the hours required for graduation may be reduced by three.
7. Physical education activity courses are not acceptable toward bachelor degree requirements in the College of Engineering, except in Computer Science Department.

**Curricula Requirements in the College of Engineering**

The degree programs offered by the several departments are listed in alphabetical order on the following pages. Following these departmental listings, the programs of studies for the various options available under the bachelor of engineering program are listed. Descriptions of the courses offered will be found, listed by departments, in the Courses of Instruction section of this catalog.

**Course of Study for Engineering Students**

FIRST YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Chem 121L Gen | 4 | (3-3) |
| *Engl 101 Wrtg w/Rdgs in Expos* | 3 | (3-0) |
| Engr-G 115L Intro to Engr/Lab | 1 | (1-1) |
| Engr-G 120L Comp Program for Engr | 3 | (2-2) |
| or | | |
| Engr-G 122L Intro Engr Methods | 3 | (3-3) |
| Math 162 Calculus I | 4 | (4-0) |
| | (13-16) | 15 |

Second Semester

| | | |
|---|---|---|
| Engr-G 120L Comp Prog for Engr | 3 | (2-2) |
| Engr-G 122L Intro Engr Methods | 3 | (3-3) |
| Physcs 160 Gen | 3 | (3-0) |
| Math 163 Calculus II | 4 | (4-0) |
| ‡Elective | 3 | (3-0) |
| †Science elective | 3 or 4 | (3-3) |
| | (16-6) | 16 or 17 |

Notes

1. Special freshman requirements for students majoring in computer science are shown on p. 49.
2. High school preparation for Math 162 should include at least 2 units of algebra, 1 of geometry, and 1/2 of trigonometry or college-preparatory mathematics. Students who do not qualify for Math 162 will be required to take remedial mathematics.
3. Students with unsatisfactory scores in the ACT English area will be required to take remedial English.
4. The courses listed in this first-year program by name and number are considered to be part of the student's major and may not be taken on a credit (CR) basis (see p. 24 for an explanation of the grading system).
5. Engr-G 120L and Engr-G 122L require that the student be eligible for Math 162.

## Chemical Engineering

The chemical engineering program is offered under the administration of the Department of Chemical and Nuclear Engineering.

Chemical engineering has long played a primary role in the nation's energy resources—the extraction, refinement, and transportation of natural gas, crude oil, and other fossil fuels. It will continue to play a vital role in energy resources for the future—nuclear, geothermal, solar, and coal gasification. Chemical engineering relates directly to the cleaning up of our water, air, and land because separation processes and chemical reaction engineering form the basis of any attack on pollution. The chemical engineer will continue to play an important role in feeding, clothing, and housing an increasing population throughout the world. Participation of chemical engineers in artificial body organ development and other areas closely related to the medical field will continue to expand.

The goal of chemical engineering education is the development of the ability to apply the principles of chemical and certain physical changes of materials to the resolution of technological problems for the benefit of society. The course of study in chemical engineering is designed to afford students broad training in the fundamentals of mathematics, physics, chemistry, and the engineering sciences, followed by the distinctly professional courses of unit operations and design.

The graduate chemical engineer will find many avenues of opportunity in research and development; production, operation, and maintenance; design and construction; management and administration; technical service and sales; and consulting. These opportunities are worldwide in industries which have produced an array of synthetic chemical products: antibiotics, fibers, fertilizers, paper, explosives, rocket propellants, ceramics, pesticides, adhesives, detergents, paints, medical supplies, process foods, cosmetics, and synthetic rubbers.

**Laboratory Facilities.** The chemical engineering laboratory is equipped with pilot plant equipment for the study of unit operations such as evaporation, solvent extraction, distillation, absorption, filtration, and crystallization. Teaching laboratories for the engineering sciences, fluid mechanics, and process control are available in the Farris Engineering Center.

**Computer Facilities.** Digital computers provide the basic computational tool for today's modern engineer. Freshman engineering students are introduced immediately to the University's IBM 3032 computer. Numerical analysis and digital computation is an important part of each year's instruction in chemical engineering, and by the senior year students are encouraged to use many of the sophisticated computer codes available in industry.

**Cooperative Education.** Chemical engineering students may participate in the cooperative education program. Excellent opportunities exist throughout the Southwest for undergraduate chemical engineering students. For further information contact the Department Chairperson or the Director of Cooperative Education.

**Curriculum in Chemical Engineering**

Hours required for graduation: 130*

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Math 264 Calculus III | 4 | (4-0) |
| Physcs 161 Gen | 3 | (3-0) |
| Chem 301 and 303L Organic | 4 | (3-3) |
| Ch E 251L Chem Calc | 3 | (2-2) |
| Econ 200 Prin and Prob | 3 | (3-0) |
| | 17 | (15-3) |

Second Semester

| | | |
|---|---|---|
| Math 316 App Ord Diff Eq | 3 | (3-0) |
| Physcs 262 Gen | 3 | (3-0) |
| Basic Science Lab | 1 | (0-3) |
| Adv Chem elective | 3 | (3-0) |
| Ch E 252 Intro Trans Phen | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| | 16 | (15-3) |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Ch E 301 Thermodynamics | 3 | (3-0) |
| Ch E 311 Unit Ops I | 3 | (3-0) |
| Ch E 317 Chem Engr Analysis | 3 | (3-0) |
| Chem 311 Physical | 4 | (4-0) |
| Tech elective | 3 | (3-0) |
| | 16 | (16-0) |

Second Semester

| | | |
|---|---|---|
| Ch E 302 Ch E Thermo | 3 | (3-0) |
| Ch E 312 Unit Ops II | 3 | (3-0) |
| Ch E 314L Chem Engr Lab I | 2 | (0-6) |
| Chem 312 Physical | 4 | (4-0) |
| Tech elective | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| | 18 | (16-6) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Ch E 315L Chem Engr Lab II | 2 | (0-6) |
| Ch E 450 Chem Engr Econ | | |

†Students who major in chemical engineering, biomedical engineering, or nuclear engineering are encouraged to take Chem 131L and must take Chem 122L or 132L for the science elective. Students who major in civil engineering or electrical and computer engineering must take Chem 122L or 132L for the science elective. Others should consult their major advisers.

‡Humanities or social science elective. Engl 102 required in civil engineering, and electrical and computer engineering. Others should consult their major adviser.

*Reduced for students placed ahead in freshman mathematics and/or English.

| | | |
|---|---|---|
| | 3 | (3-0) |
| Ch NE 451 Senior Seminar | 1 | (1-0) |
| Ch E 461 Ch E Kinetics | 3 | (3-0) |
| Ch E 493L Intro to Design | 1 | (0-3) |
| H&SS elective | 3 | (3-0) |
| Tech elective—technology | 3 | (3-0) |
| | 16 | (13-9) |
| Second Semester | | |
| Ch E 370 Engr Mat Science | 3 | (3-0) |
| Ch E 494L Ch E Design | 3 | (2-3) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| Tech elective—science | 3 | (3-0) |
| | 15 | (14-3) |

Notes

1. At least 15 hours of electives are to be taken in the humanities and social sciences (H&SS). See department for approved list.
2. The advanced chemistry elective must be either Chem 302 or a 300- or 400-level course approved by the department.
3. Physics 163L or 264L or Chem 304L are acceptable for the basic science lab.
4. Technical electives are chosen from approved upper division courses in engineering, mathematics, and science. The department requires that one science and one technology elective be selected from list of approved departmental courses. The chairperson may allow up to 6 hours of technical electives for students taking required ROTC courses in aerospace or naval science.
5. Prior to the completion of 95 semester hours, the student must file an application for the B.S. degree.

## Civil Engineering

Civil engineering is an extremely broad professional field. Areas of interest include such seemingly diverse subjects as the theory of traffic flow, electronic computations, microbiology, the chemistry of polymers, network theory, earth physics, the stresses and strains induced in aerospace structures, the psychology of automobile driver behavior, the problems of air and water pollution, and the effects of earthquakes on structures. Civil engineering problems involve the physical, mathematical, life , earth, social, and engineering sciences and may involve many other professional areas. However, civil engineering does have a unique and unified role. In particular, civil engineering is concerned with the engineering (planning, design, and construction) of systems of constructed facilities related to man's basic needs and desires. The facilities are often large or extensive and must be engineered as operational systems involving the complex interaction of many components with each other as well as with the physical and social environment. Typical civil engineering facilities include transportation systems, water conservation and distribution systems, pollution control and waste disposal projects, and various structural systems such as buildings, bridges, and aerospace vehicles and launching facilities.

The scope and complexity as well as the interdisciplinary involvement of civil engineering continue to increase rapidly with the development of modern science and technology and the population growth with its spiraling demands upon the air-land-water environment. The future challenges to the profession are immense. The preparation of the civil engineering student is aimed toward meeting these challenges through innovative application of known principles, creative research to discover new approaches, and imaginative design to fulfill society's needs. Civil engineers with advanced education beyond the baccalaureate are in increasing demand. Students with sufficiently high grades should continue to the master's degree or beyond.

**Construction Option.** R. H. Clough, adviser. Students who are interested in careers in the construction industry can elect to follow the construction option that is offered by the Department of Civil Engineering. This option, which culminates in a Bachelor of Science in Civil Engineering, gives the student educational background in accounting and economics as well as a working knowledge of construction costs, administration, contracts, management, methods, and equipment. Students who wish to follow the construction option should enter the program at the start of their sophomore year, and they are encouraged to take jobs in the construction industry during the summer months.

**Honors Program.** Eligible freshmen and upperclassmen in the Department of Civil Engineering are urged to enroll in the Honors Program. Civil engineering students may graduate with General Honors (honors in general studies) or with Departmental Honors or with both. Information is available from University College advisers, departmental advisers, and the University Honors Center.

**Cooperative Education Program.** The Department of Civil Engineering offers a cooperative education program which alternates classroom study with a planned program of related work experience (see p.46 for further details). Additional information may be obtained from the Chairperson of the Department of Civil Engineering and the Director of the Cooperative Education Program.

**Combined BSCE-MBA Program.** A combined program is available in which a student may earn both a B.S. in Civil Engineering and a Master of Business Administration within five years. The student should begin planning for a combined program during the sophomore year since at least one summer session of study is necessary. Details are available from the Department of Civil Engineering and the Robert O. Anderson Graduate School of Management.

**Civil Engineering Laboratories.** The civil engineering laboratories have been designed to be an integral part of the educational process as well as an introduction to modern industrial laboratory practice in materials quality control, design, and research. Well-equipped instructional laboratories are provided for engineering measurements, mechanics of materials, concrete and bituminous materials, soil mechanics, fluid mechanics, and sanitary engineering. Modern experimental equipment and techniques are utilized in all laboratories.

**Computational Facilities.** Throughout the curriculum the student is exposed to a variety of computational equipment ranging from departmental microcomputers to the University owned system. The department has digital micro and minicomputers available for student use as well as remote terminals connected to the University's central computer system.

**Curriculum in Civil Engineering**

Hours required for graduation: 130*

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| SECOND YEAR | | |
| First Semester | | |
| Math 264 Calculus III | 4 | (4-0) |
| Physcs 161 Gen | 3 | (3-0) |
| CE 270L Constr Mat | 1 | (0-3) |
| CE 202 Engr Stat | 3 | (3-0) |
| CE 281L Engr Meas | 3 | (2-3) |
| Engl 219 Tech Wrtng | 3 | (3-0) |
| or | | |
| Sp Com 130 Pub Spkng | 3 | (3-0) |
| | 17 | (15-6) |
| Second Semester | | |
| Math 316 Appl Ord Diff Eq | 3 | (3-0) |
| Physcs 262 Gen | 3 | (3-0) |
| CE 282L Engr Surveys | 2 | (1-3) |
| ME 206L Dynamics | 3 | (2-3) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| | 17 | (15-6) |
| THIRD YEAR | | |
| First Semester | | |
| CE 340 Prob Mthds in Engr I | 3 | (3-0) |
| or | | |
| Math 311 Vector Analysis | 3 | (3-0) |
| or | | |
| Math 345 Stat Methodology | 3 | (3-0) |
| CE 302 Mech of Mat | 3 | (3-0) |
| CE 303L Mech of Mat Lab | 1 | (0-3) |
| CE 305 Struc Anal I | 2 | (2-0) |
| CE 331L Fluid Mech | 4 | (3-3) |
| CE 382 Transp Engr | 3 | (3-0) |
| | 16 | (14-6) |
| Second Semester | | |
| CE 360L Soil Mech | 3 | (2-3) |
| CE 306 Struc Anal II | 3 | (3-0) |
| CE 332 Intro to Hydrology | 2 | (2-0) |
| CE 324L Struc Des in Metals | 3 | (2-3) |
| CE 336L Wtr & Wast Wtr Trt | 3 | (2-3) |
| H&SS elective | 3 | (3-0) |
| | 17 | (14-9) |
| FOURTH YEAR | | |
| First Semester | | |
| CE 411 Reinf Concr Des | 3 | (3-0) |
| CE 370 Engr Mat Science | 3 | (3-0) |
| CE 490 Aspects Prof Prac | 2 | (2-0) |
| Ch E-ME 301 Thermodynamics | 3 | (3-0) |
| Tech Elective | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| | 17 | (17-0) |
| Second Semester | | |
| Econ 200 Prin and Prob | 3 | (3-0) |
| Tech Electives | 8 | (8-0) |
| H&SS elective | 3 | (3-0) |
| | 14 | (14-0) |

Notes

1. H&SS electives are to be chosen from the humanities and social sciences. See Department Chairperson fo list of approved courses.
2. See Department Chairperson for list of approved tech nical electives. Students enrolled in the ROTC pro grams may, with approval of the Departmen Chairperson, substitute aerospace studies or nava science for up to 6 hours of technical electives.

## Computer Science

The program of this department is directed toward th education of students for careers in the use of electroni digital computers. Emphasis is on problem-solving tech niques and programming methodology with special empha sis on modern techniques of analysis, design an implementation. The required curriculum provides student with a general education in the humanities, social and be havioral sciences, laboratory sciences, and a minor field c the student's choice, as approved by the department. Th required courses in mathematics and computer scienc provide a broad background in modern techniques of com puter programming. The curriculum also provides a basi literacy in computer hardware and allows students to cor centrate their advanced studies (junior and senior years) i one or more of a variety of areas including business com puting, scientific computing, software engineering, opera ing systems, language design and implementation an artificial intelligence.

**Admission**

Students wishing to enter the bachelor program in Com puter Science must complete the following:

1. A minimum of 26 hours of earned credit with a grac of C or better in all courses counted in the 26 hou and an overall GPA for all courses taken at UNM of n less than 2.0;
2. 18 hours from among the following 27 hours: CS15 CS155, CS253, Math 162, 163, Laboratory Science & II (see laboratory science requirements in the ne section) with a grade of C or better in all course counted in the 18 hours.

Special consideration will be given to students who are good standing but are no longer eligible to remain in the current college even though they may not completely satis the above criteria. This may be the case with some studen who are ineligible to remain in University College becau they have completed too many hours. Likewise, spec consideration will be given to students who will be unat to complete the courses required to satisfy the above crit ria due to regulations in effect in their current degree pr gram. This may be the case with students who must ma up specific deficiencies immediately in order to remain their current program even though they may not intend remain. Students who feel they require an exception to t normal admission criteria should consult the undergradua adviser in the Department of Computer Science.

* Reduced for students placed ahead in freshman math matics and/or English.

**Graduation Requirements**

To graduate with the degree of Bachelor of Science in Computer Science, the following requirements must be met:

1. Completion of 130 semester hours approved by the academic adviser and the Chairperson of the Department.
2. Completion of at least 40 hours in courses numbered 300 or above.
3. Completion of a minimum of 36 hours in computer science with a minimum scholarship index of 2.5 including the following courses or their equivalent:
   CS 154 Foundations of Computing Science
   CS 155 Introduction to Computer Programming
   CS 253 Intermediate Programming
   CS 255 Introduction to Computing Systems
   CS 263 Fundamentals of Data Structures
   CS 303 Fundamentals of Algorithms
   CS 355 The Syntax and Semantics of Programming Languages
   CS 357 Operating Systems Principles

   CS-150, 337, 390 and 490 may be taken as general electives, but may not be used to satisfy the requirement of 36 hours in Computer Science. CS-375 counts toward the Math requirement and may not apply to the 36 hours of CS.
4. A minimum of 17 hours in mathematics with a minimum scholarship index of 2.5, including the following or their equivalent:
   Math 162 Calculus I
   Math 163 Calculus II
   Math 317 Discrete Mathematics
   Math 375 Introduction to Numerical Computing

   One of the following:

   Math 314 Linear Algebra with Applications
   Math 321 Linear Algebra
   Math 322 Abstract Algebra
5. A minimum of 26 hours in general-education electives approved by the adviser distributed as follows:
   a. Humanities and Liberal Arts:
      English 101 (or a score of 25 or above on the English ACT)
      Electives from English and literature, modern and classical languages, philosophy, architecture, art, fine arts, American studies. 9 hours
   b. Social and behavioral studies: (for example, anthropology, geography, economics, history, political science, psychology, linguistics, sociology, speech communication). 9 hours
   c. Laboratory sciences: EECE 238L and one of the following sequences:
      Astronomy 270, 272L - 271, 273L
      Biology 121L - 122L
      Chemistry 121L - 122L
      Geology 101, 105L - 102, 106L
      Physics 160-161, 163L 11 hours
6. Completion of minor field. Students may minor in an area of their choice, provided the program is approved by the CS department undergraduate adviser. An interdisciplinary minor of not less than 24 hours can be developed for individual students.

o courses with less than a C may be used to satisfy any of ie graduation requirements. Also, no more than 4 credit ours in physical or health edcuation may be applied toward raduation. Additionally, math courses below 121 or equivlent may not be used toward the CS degree.

he Three-Two M.B.A./CS Program permits a student to ɔmplete both a bachelor's degree in Computer Science ıd an M.B.A. degree in five years. The first three years the udent pursues a program for the CS bachelor's degree. In ıe fourth year, the student begins the first year of the .B.A. curriculum in the School of Management and comletes the requirements for the CS bachelor's degree. The usiness courses to be taken in the last year will satisfy the inor requirement for the bachelor's degree in Computer cience. Students interested in this program should obtain vised suggested schedules of study from the CS office in eir freshman year.

**inor in Computer Science**

minor in computer science is available for majors in other epartments. The minimum requirement for a minor is ɔmpletion of 21 hours in Computer Science. The 21 hours ust include the following courses:

CS-154, CS-155, CS-253, CS-255, and CS-263

No course with a grade of less than C may be counted in the 21 hours.

Also, CS-150, CS-337, CS-390, and CS-490 may not be counted in the 21 hours.

**Advising**

Upon entering the program, students will be assigned a formal adviser who will help organize a program of study. The student is required to see this adviser once each semester. Prior to entering the program, students should consult, informally, a member of the department's faculty to insure that they are taking appropriate steps toward satisfying the entrance requirements. Students should contact the department office for referral to an adviser.

**Graduate Study**

The Department offers a Master of Science and a Doctor of Philosophy in Computer Science to prepare students for careers in the use of computers in a wide variety of applications. The program is built upon a core of courses in computer science and encourages the election of options in related fields or in fields of application such as mathematics, physical sciences, business, library science, law, medicine, education, or the humanities.

The Department also offers, with the Anderson Graduate School of Management, a dual degree program in which a student may earn a M.B.A. in Business and Administrative Sciences and a Master of Science in Computer Science.

For master's degree curricula, see the Graduate Programs Bulletin. Contact the Department of Computer Science for further information on the Ph.D. program.

**Curriculum in Computer Science**

The following schedule is intended as a model for students when planning their course of studies. It should be noted that the schedule must actually be adjusted to compensate for any deficiencies or advanced preparation on the part of the student prior to beginning the freshman year. All entering freshmen must take the mathematics placement exam, given free by the Department of Mathematics and Statistics, to aid the adviser in guiding the student into the appropriate entry level math course. Students must also have taken the ACT exam for the same purpose in math and English. Students should not be in any Computer Science courses until they have knowledge of mathematics equivalent to Math 150 (algebra and trigonmetry).

FIRST YEAR

| Semester I | | Semester II | |
|---|---|---|---|
| Engl 101 | 3 | CS 155 | 4 |
| Gen Elect* | 6 | CS 154 | 3 |
| Math 162 | 4 | Math 163 | 4 |
| Lab Sci I | 4 | Lab Sci II | 4 |
| | 17 | | 15 |

SECOND YEAR

| Semester III | | Semester IV | |
|---|---|---|---|
| CS 253 | 4 | CS 263 | 4 |
| EECE 238L | 4 | CS 255 | 3 |
| Minor/Gen elect* | 9 | Math 317 | 3 |
| | | Minor/Gen elect* | 6 |
| | 17 | | 16 |

THIRD YEAR

| Semester V | | Semester VI | |
|---|---|---|---|
| CS 355 | 3 | CS 357 | 3 |
| CS 303 | 3 | CS elective | 3 |
| Math 321 | 3 | Minor elect | 3 |
| Minor/Gen elect* | 6 | Gen elect* | 3 |
| | | Math 375 | 3 |
| | 15 | | 15 |

FOURTH YEAR

| Semester VII | | Semester VIII | |
|---|---|---|---|
| CS Electives | 3 | CS electives | 3 |
| Minor Elect | 3 | Minor Elect | 3 |
| Gen elect* | 12 | Gen elect* | 12 |
| | 18 | | 18 |

Students attempting to plan ahead should be aware that the lower division, Computer Science courses (CS-154, 155, 253, 255, 263) are usually offered in the summer sessions as well as in the spring and fall. The same is true of most lower division math courses. Upper division courses are seldom offered in the summer.

* General electives generally include courses in the humanities, social and behavioral sciences.

# Electrical and Computer Engineering

The Department of Electrical and Computer Engineering (EECE) offers two undergraduate degree programs, one in electrical and one in computer engineering. The technology in both these fields changes very rapidly. For this reason the curricula in both electrical and computer engineering stresses fundamental concepts as well as current application methods.

**Honors Program**

Students with a B+ average in the Department of Electrical and Computer Engineering are encouraged to enroll in the Honors Program. EECE students may graduate with General Honors (honors in general studies) or with Departmental Honors or with both. Information is available from University College advisers, departmental advisers, and the University Honors Center.

**Special Five-Year Programs**

This Department participates in the College of Engineering cooperative education program. It is a five-year curriculum which offers, during alternate semesters (including the summer session), classroom study and, during off-semesters, a planned program of related engineering work experience in industry.

For students who wish to combine a baccalaureate degree in engineering with a master's degree in business administration, there is available, in cooperation with the Robert O. Anderson Graduate School of Management, the "Three-Two" Program. The student must satisfy the academic requirements of both degrees, and early consultation on the curricula is encouraged.

Students interested in nuclear engineering may arrange their undergraduate electives so that a master's degree in nuclear engineering may be obtained within an additional year.

**Electrical Engineering Laboratories**

Laboratories are available in the major specialty areas of electrical engineering. Laboratory courses are organized around design and the solution of engineering problems rather than a pattern of routine experiments.

**Electrical Engineering**

Electrical engineering involves the design of electrical and electronic devices and systems. This includes the design of electronic and microelectronic circuits, solid-state devices, microwave devices, communication and control systems, lasers and optoelectronic devices and systems, electrical power devices and systems, signal and image processing systems, computers and digital systems, biomedical components and systems, etc. The B.S. degree in electrical engineering is a broad professional degree which provides the basic science, mathematics, and engineering design needed for the practice of electrical engineering. Some specialization is possible through technical electives in the senior year. Areas of specialization include:

Microwaves
Lasers/Optoelectronics
Electronics
Solid-State/Microelectronics
Electrical Power
Control Systems
Signal Processing and Communication
Computers/Digital Design
Biomedical Engineering

**Curriculum in Electrical Engineering**

Hours required for graduation: 130*

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Physcs 161 Gen | 3 | (3-0) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| EECE 238L Comp Logic Dsgn | 4 | (3-3) |
| Math 316 Diff Eq | 3 | (3-0) |
| †H&SS Elective | 3 | (3-0) |
| | 16 | (15-3) |

Second Semester

| | | |
|---|---|---|
| EECE 206L EE Lab I | 2 | (1-3) |
| EECE 213 Circuit Analysis II | 4 | (4-0) |
| Physcs 262 Gen | 3 | (3-0) |
| Math 264 Calculus III | 4 | (4-0) |

| | | |
|---|---|---|
| H&SS Elective | 3 | (3-0) |
| | 16 | (15-3) |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| EECE 314 Signals and Comm | 3 | (3-0) |
| EECE 344L Microprocessors | 4 | (3-3) |
| EECE 323 Intro Digital Electr | 3 | (3-0) |
| EECE 325L Electr Lab I | 2 | (1-3) |
| EECE 361 Electromag Fields and Waves I | 3 | (3-0) |
| | 15 | (13-6) |

Second Semester

| | | |
|---|---|---|
| CE 202 Engr Statics | 3 | (3-0) |
| EECE 324 Intro Analog Electr | 3 | (3-0) |
| EECE 326L Electr Lab II | 2 | (1-3) |
| EECE 362 Electromag Fields and Waves II | 3 | (3-0) |
| EECE 384 Electro Energy Con | 2 | (2-0) |
| EECE 371 EE Mat and Dev | 4 | (4-0) |
| | 17 | (16-3) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| ME 206L Dynamics | 3 | (2-3) |
| EECE 340 Probabilistic Methds | 3 | (3-0) |
| EECE 445L Intro to Control | 3 | (2-3) |
| EECE 418L Senior Lab | 2 | (1-3) |
| †H&SS Elective | 3 | (3-0) |
| ++Math Elective | 3 | (3-0) |
| | 17 | (14-9) |

Second Semester

| | | |
|---|---|---|
| ChE-ME 301 Thermodynamics | 3 | (3-0) |
| *EECE Technical Electives | 6 | (6-0) |
| *EECE Lab Elective | 2 | (1-3) |
| †H&SS Elective | 6 | (6-0) |
| | 17 | (16-3) |

**Computer Engineering**

The Computer Engineering program, which leads to a Bachelor of Science in Computer Engineering, is designed to meet the growing demand for engineers familiar with both computer hardware and computer software. The demand for computer engineers is expected to outstrip the supply for the foreseeable future. The emphasis in the program is on the design-oriented aspects of both computer hardware and software. In order to accomplish this goal, the first two years of the program lay a firm foundation of mathematics, physics, and engineering science. Courses in Electrical Engineering provide the student with an understanding of how a computer operates at the electronics level. Courses in computer logic, organization, and systems, provide the understanding at a higher level of abstraction. The software courses include programming at both the high level, such as FORTRAN, and at the low level, such as assembly language. In order to teach the design of good programs, such topics as data structures and block structured programming are included.

**Computer Facilities**

The department has a number of computers available for student use and instruction. These computers include a PDP-11/40, two HP 98 45 systems, six M6800 microprocessor stations, and two EAI analog computers. These machines are equipped with a variety of peripherals, including disks, magnetic tapes, floppy disks, printers, CRT terminals, digital plotters, and graphics devices. Hands-on experience with the computers is stressed. In addition to the department computers, the College of Engineering has a Digital Equipment Corporation VAX 11/780 which is used for research and a PDP-11/20 that can operate in standalone mode or as a remote job entry station to the University IBM 3032.

* Reduced for Students placed ahead in freshman mathematics and/or English
† See approved list of Humanities and Social Science Electives.
++ 300-level or higher math elective
* Approval of adviser required

**Curriculum in Computer Engineering**

Hours required for graduation: 130*

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| EECE 238L Comp Logic Design | 4 | (3-3) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| Math 316 Diff Eq | 3 | (3-0) |
| Physcs 161 Gen | 3 | (3-0) |
| †H&SS Elective | 3 | (3-0) |
| | 16 | (15-3) |

Second Semester

| | | |
|---|---|---|
| EECE 344L Microprocessors | 4 | (3-3) |
| EECE 213 Circuit Analysis II | 4 | (4-0) |
| EECE 206L EE Lab I | 2 | (1-3) |
| Math 264 Calculus III | 4 | (4-0) |
| Physcs 262 Gen | 3 | (3-0) |
| | 17 | (15-6) |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab |
|---|---|---|
| EECE 323 Intro Digital Electr | 3 | (3-0) |
| EECE 314 Signals and Comm | 3 | (3-0) |
| CS 300 Struct Program | 5 | (5-0) |
| Math 317 Discrete Math | 3 | (3-0) |
| †H&SS Elective | 3 | (3-0) |
| | 17 | (17-0) |

Second Semester

| | | |
|---|---|---|
| EECE 337 Intro Arch and Op | 3 | (3-0) |
| EECE 340 Probabilistic Methds | 3 | (3-0) |
| EECE 325L Electr Lab I | 2 | (1-3) |
| CS 263 Data Structures | 4 | (4-0) |
| †H&SS Elective | 6 | (6-0) |
| | 18 | (17-3) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab |
|---|---|---|
| EECE 435 Comp Engr Design | 3 | (3-0) |
| EECE 437 Operating Systems | 3 | (3-0) |
| CE/ME 350 Engr Economics | 3 | (3-0) |
| **Tech Elective | 3 | (3-0) |
| †H&SS Elective | 3 | (3-0) |
| | 15 | (15-0) |

Second Semester

| | | |
|---|---|---|
| EECE 440 Computer Networks | 3 | (3-0) |
| **Tech Electives | 6 | (6-0) |
| °Electives | 3 | (3-0) |
| †Social Sci/Hum Elective | 3 | (3-0) |
| | 15 | (15-0) |

# Mechanical Engineering

**Profession**

Mechanical engineering is a very diversified branch of engineering. It is broadly concerned with energy, dynamic systems, and manufacturing processes. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of a wide variety of devices, machines, and systems for energy conversion, environmental control, material processing, transportation, materials handling, and other purposes. Mechanical engineers do creative design, applied research, development, and management. The demand for mechanical engineers by industry is consistently high at all levels.

* Reduced for students placed ahead in freshman mathematics and/or English.
†See approved list of Social Science/Humanities electives.
** Technical electives: These electives will be developed in consultation with the computer engineering adviser from courses in EECE, CS, Math, Physics, and other areas of engineering to satisfy restrictions.
°Consult the computer engineering adviser for restrictions on this elective.

**Curriculum**

In order to meet the challenge of a changing technologica society, mechanical engineering students are prepared with basic principles for analysis, design, experimental work and computer utilization. Many technical electives permi students to develop further according to their interest and aptitude.

**Mechanical Engineering Laboratories**

The mechanical engineering laboratories are used by th students in the instructional program to get experience with measurement techniques, test procedures and equipmen representative of the type they may encounter in industry Tests on equipment such as heat pumps and solar collector are conducted.

**Advanced Study**

Mechanical engineering students wishing to continue thei education at an advanced level may have that opportunity The Mechanical Engineering Department offers the M.S and Ph.D. degrees, and the department's undergraduat program is good preparation for graduate study. More in formation on the graduate programs may be found in th Graduate Programs Bulletin.

The Mechanical Engineering program has proven to be goo preparation for other professional schools. Recipients o the B.S.M.E. degree have continued their education in law schools, schools of business and administrative sciences medical schools, and dental schools.

**Cooperative Education Program**

Mechanical engineering students may elect a cooperativ education program in which they are employed full time b an industry or governmental agency for a part of the yea and in which they are full-time students for a part of th year. Students who need financial aid or who wish to gai engineering experience will find this program attractive.

**Financial Aid**

There is a substantial number of scholarships and loan available to mechanical engineering students. There ar also part-time job opportunities for mechanical engineerin students in the Mechanical Engineering Department, par time employment in the Computing Center, Kirtland AFE and elsewhere in Albuquerque. In case of need, you shoul consult the Chairperson of the Mechanical Engineerin Department.

**Student Activities**

Mechanical engineering is not all work and study. There ar many social opportunities available within the Departmer and elsewhere on campus. Student organizations of th Department allow students to develop lasting friendship and unity. Students have always enjoyed close relationship with the faculty in the Department.

**Curriculum in Mechanical Engineering**

Hours required for graduation: 130*§

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lal |
|---|---|---|
| Math 264 Calculus III | 4 | (4-( |
| Physcs 161 Gen | 3 | (3-( |
| Econ 200 Prin and Prob | 3 | (3-( |
| ME 201L Intro to Mech | 1 | (0- |
| CE 202 Engr Stat | 3 | (3- |
| †Elective | 3 | (3- |
| | 17 | (16- |

Second Semester

| | | |
|---|---|---|
| Math 311 Vector Analysis | 3 | (3- |
| Physcs 262 Gen | 3 | (3- |
| ME 206L Dynamics | 3 | (2- |
| EECE 203 Circuit Analysis I | 3 | (3- |
| Elective | 3 | (3- |
| | 15 | (14- |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-La |
|---|---|---|
| Math 316 Diff Eq | 3 | (3- |
| ME 301 Thermodynamics | 3 | (3- |
| ME 317 Fluid Mech | 3 | (3- |
| ME 314L Dyn of Mech Sys | 3 | (2- |
| EECE 204 Intro to Elec Engr | 3 | (3- |

| | | |
|---|---|---|
| CE 302 Mech of Mat | 3 | (3-0) |
| | 18 | (17-3) |

Second Semester

| | | |
|---|---|---|
| ME 302 Thermodynamics II | 3 | (3-0) |
| ME 320 Heat Transfer | 3 | (3-0) |
| ME 357 Intro to Mech Vib | 3 | (3-0) |
| ME 318L ME Lab I | 2 | (0-6) |
| ME 370 Engr Mat Science | 3 | (3-0) |
| Elective | 3 | (3-0) |
| | 17 | (15-6) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| ME 358L Design of Sol Sys | 3 | (2-3) |
| ME 363L Anal of Fluid Sys | 3 | (2-3) |
| ME 351L ME Lab II | 2 | (0-6) |
| Elective | 3 | (3-0) |
| **Tech elective | 3 | (3-0) |
| | 14 | (10-12) |

Second Semester

| | | |
|---|---|---|
| ME 359L Mech Eng Design | 3 | (1-6) |
| Tech elective | 9 | (9-0) |
| Basic science or tech elec | 3 | (2-0) |
| Elective | 3 | (3-0) |
| | 18 | (15-6) |

NOTES

1. Electives are to be chosen from the humanities and social sciences, with the approval of the Department Chairperson.
2. Technical electives taken for degree requirements approved by the Department Chairperson. They may be selected from ME 341, 350, 352L, 355, 356, 365, 373, 382, 401, 402, 414, 425, 451-452, 455, 461-462, 465, 480, 481, 483, 490, and other engineering and science courses. Students enrolled in the ROTC programs may, with approval of the Department Chairperson, substitute aerospace studies or naval science for **up to 3** of technical electives: Technical electives may not be taken on the CR/NC option.

## Nuclear Engineering

The nuclear engineering program is offered under the administration of the Department of Chemical and Nuclear Engineering.

Nuclear engineering is concerned with the release, control, and utilization of energy from all types of nuclear processes and with the control and utilization of radiation. It is a relatively new branch of engineering, with rapid changes and frequent breakthroughs, which requires engineers capable of developing new ideas and new concepts.

Graduate nuclear engineers find many challenging opportunities in projects concerned with fission reactors, controlled nuclear fusion, space propulsion, direct energy conversion, nuclear fuel processing, water desalination, etc. In order to prepare students to develop new ideas and new concepts in accord with the ever- changing needs, the nuclear engineering curriculum emphasizes an advanced background in the fundamental areas of mathematics, science, and engineering, as well as an understanding of current technology.

Elective courses in nuclear engineering are available as a minor option for bachelor's degree programs in all of the undergraduate engineering departments.

### Degree Programs

A student may concentrate electives in nuclear engineering courses or may pursue the nuclear engineering option, which leads to a bachelor of engineering degree.

Nuclear engineering graduate programs are available leading to a master of science and to a doctor of philosophy. Students from other disciplines who expect to do graduate work in nuclear engineering are advised to concentrate on physics, mathematics, and nuclear engineering in the undergraduate course work in addition to their regular program.

### Nuclear Engineering Laboratories

The principal equipment in the nuclear engineering laboratories includes the following: AGN-201M critical reactor; power plant simulator; 20,000 curie Co-60 facility, activation analysis cell; pulsed neutron generators; natural uranium, sub-critical reactor; gamma-ray spectrometer; multichannel analyzers; graphite pile; intense particle beam accelerators for plasma physics research; and supporting radiation counting equipment.

In addition to the well-equipped laboratories on campus, the advanced reactors and radiation equipment of the Sandia Laboratory, Los Alamos Scientific Laboratory, and the Air Force Weapons Laboratory are utilized for both instruction and research.

## Bachelor of Engineering Options

Students who wish to pursue a bachelor of engineering degree, instead of the bachelor of science in one of the departments previously listed, must report this intention to the Engineering College Records office at the time they transfer into the College. The College Records office will assign an adviser appropriate for the option that the student plans to pursue. The students will work with this adviser rather than a specific department, in planning programs, and selecting electives. The curriculum requirements in the options are listed in the following pages.

### Biomedical Engineering Option

Biomedical engineering is a relatively new and growing profession which combines the concepts and techniques of many related disciplines. With the aid of the necessary supporting knowledge of chemistry, physics, mathematics, and biology, many of the theoretical and experimental methods of engineering can be applied directly to the solution of numerous challenging problems in the life sciences and in clinical medicine. For example, research-oriented biomedical engineers may wish to participate in the design of advanced clinical patient-monitoring systems, or in the development of artificial limbs and internal organs, or in the application of modern neurology to the design of more intelligent machines. Expanding national health care delivery systems and new priorities for the quality of life in future economic planning are providing new employment opportunities for practice-oriented biomedical engineers. The graduate biomedical engineer interested in eventual clinical practice may wish to apply for admission to a school of medicine, dentistry, or veterinary medicine. Opportunities are also available to qualified biomedical engineering graduates to pursue further graduate study in engineering, biology, biochemistry, pharmacology, physiology, and microbiology.

### Curriculum in Biomedical Engineering Option

Hours required for graduation: 130*

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Biol 121L Prin Biol | 4 | (3-3) |
| Chem 301 Org Chem | 3 | (3-0) |
| Chem 303L Org Chem Lab | 1 | (0-3) |
| Physcs 161 Gen | 3 | (3-0) |
| CE 202 Eng Statics | 3 | (2-3) |
| Math 264 Calculus III | 4 | (4-0) |
| | 18 | (15-9) |

Second Semester

| | | |
|---|---|---|
| Biol 122L Prin Biol | 4 | (3-3) |
| Chem 302 Org Chem | 3 | (3-0) |
| Chem 304L Org Chem Lab | 1 | (0-3) |
| Math 316 Diff Eq | 3 | (3-0) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| EECE 206L EE I Lab | 2 | (1-3) |
| | 16 | (13-9) |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Physcs 262 Gen | 3 | (3-0) |
| Chem 315 Phys Chem | 4 | (4-0) |
| Sp Com 130 Pub Spkng | 3 | (3-0) |
| †Tech electives | 7 | (7-0) |
| | 17 | (16-3) |

Second Semester

| | | |
|---|---|---|
| Chem 423 Biochem | 3 | (3-0) |
| EECE 405 Biomodeling | 3 | (3-0) |
| H&SS electives | 6 | (6-0) |
| †Tech elective | 4 | (4-0) |
| | 16 | (16-0) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Life science elective | 4 | (3-3) |
| †Tech electives | 5 | (5-0) |
| ‡Electives | 6 | (6-0) |
| | 15 | (14-3) |

Second Semester

| | | |
|---|---|---|
| EECE 406 Biomed Instru | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| †Tech electives | 7 | (7-0) |
| ‡Elective | 3 | (3-0) |
| | 16 | (16-0) |

### Energy and Power Systems Option

This option is designed to accomodate students wishing to study energy sources, energy conversion systems, and uses of energy or environmental effects of energy use, whose needs cannot be accomodated by the standard disciplinary engineering programs. The Energy and Power Systems Option draws on courses offered by all of the departments of the Engineering College to enable the student to formulate a program of studies especially designed to meet her/his educational objectives without regard for departmental lines. However, students whose needs can be satisfied by existing departmental programs are encouraged to follow such programs. Students with previous college experience may find the flexibility offered by this option appealing. Up to twelve hours of electives are completely unrestricted in nature; however, students are encouraged to select or use courses that are well-coordinated with their educational objectives and with the rest of the courses in their program of studies. Up to twenty-five hours of technical courses are elective in nature; but these electives must include at least: 1) three credit hours of ordinary differential equations, 2) two experimental engineering laboratory courses, one of which must deal with energy conversion systems, and 3) three credit hours of engineering analysis, design or project work that involves synthesis of the knowledge gained in preceding courses. Technical elective courses must be approved by a faculty adviser who is a member of the E & PS Option Committee, and they must satisfy a statement of educational objectives prepared by the student and approved by the Option chairperson. In practice, the courses selected to "top off" a program dictate other pre- and corequisite courses, so the number of freely selected courses is not as large as it might appear.

The energy-related research and development activity in the College of Engineering is at a high level; and since the faculty utilized for this option may be drawn from the entire Engineering College faculty, the opportunities for research and project work are great. Work currently under way includes projects involving solar energy utilization, (electrical energy distribution) in-situ energy production from coal, nuclear energy production and nuclear waste disposal, transportation energy use, and improved energy use in buildings.

Individual programs of study may be oriented towards energy production from conventional and/or unconventional sources, energy conversion devices and systems, environmental effects of energy production and use, or they may more closely parallel the traditional engineering disciplines. Electives may be selected with a view to graduate studies in engineering or one of the other professions. They may also be selected to coordinate with management courses, to form a "3-2" program in engineering and management.

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* Reduced for students placed ahead in freshman mathematics and/or English.

** Only the humanities and social science, electives may be taken on a CR/NC basis.

† The electives are to be chosen from the humanities and social sciences, with the approval of the department chairperson.

† Tech electives: These electives will be developed in consultation with an option committee adviser to comprise a meaningful sequence for stem specialization (e.g., medical instrumentation, biomechanics and prosthesis design, biomedical systems and analysis, radiological engineering, biomaterials development, biochemical engineering, engineering, clinical engineering). These 23 hours will include 10 hours from engineering science courses.

‡ Unrestricted electives.

**Curriculum in Energy and Power Systems Option**

Hours required for graduation: 130*

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Math 264 Calculus III | 4 | (4-0) |
| Physcs 161 Gen | 3 | (3-0) |
| CE 202 Statics | 3 | (3-0) |
| ‡Econ 200 | 3 | (3-0) |
| °Tech elective | 3 | (3-0) |
| | 16 | (16-0) |

Second Semester

| | | |
|---|---|---|
| Math 311 Vector Analysis | 3 | (3-0) |
| Physcs 262 Gen | 3 | (3-0) |
| °Tech elective | 3 | (3-0) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| Communications elective | 3 | (3-0) |
| | 15 | (15-0) |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| ME or ChE 301 Thermodynamics | 3 | (3-0) |
| ChE 252 or ME 317 Fluid Mech | 3 | (3-0) |
| †Tech electives | 6 | (6-0) |
| Elective | 3 | (3-0) |
| | 15 | (15-0) |

Second Semester

| | | |
|---|---|---|
| ME or ChE 302 Thermodynamics | 3 | (3-0) |
| ChE 311 or ME 320 Heat Transfer | 3 | (3-0) |
| CE-ME 370 Mat Science | 3 | (3-0) |
| ME 382 Energy Util and Conv | 3 | (3-0) |
| †Tech elective | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| | 18 | (18-0) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| EECE 480 Power Sys Anal | 3 | (3-0) |
| †Tech elective | 6 | (6-0) |
| H&SS elective | 6 | (3-0) |
| ‡Elective | 3 | (3-0) |
| | 18 | (18-0) |

Second Semester

| | | |
|---|---|---|
| NE 430 Intro to NE | 3 | (3-0) |
| Engr 301 Seminar in Engr Prac | 1 | (1-0) |
| CE/ME 350 or ChE 450 Engr Econ | 3 | (3-0) |
| †Tech electives | 4 | (4-0) |
| ‡Electives | 6 | (6-0) |
| | 17 | (17-0) |

**Nuclear Engineering Option**

The nuclear engineering option is a program of study which prepares a student for a career in fields ranging from commercial nuclear power systems and the use of radioisotopes in science, industry and medicine to research and development in advanced fission and fusion systems. Starting with a broad base of engineering science and mathematics, the four-year curriculum includes both theoretical and laboratory courses which not only provide an understanding of fundamental concepts, but also provide exposure to the type of careers available to graduates.

**Curriculum in Nuclear Engineering Option**

Hours required for graduation: 130*

SECOND YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Math 264 Calculus III | 4 | (4-0) |
| Physcs 161 Gen | 3 | (3-0) |
| CE 202 Statics | 3 | (3-0) |
| EECS 203 Circuit Analysis I | 3 | (3-0) |
| Econ 200 Prin & Prob | 3 | (3-0) |
| | 16 | (16-0) |

Second Semester

| | | |
|---|---|---|
| Math 316 App Ord Diff Eq | 3 | (3-0) |
| Physcs 262 Gen | 3 | (3-0) |
| Physcs 264L or 163L Gen Lab | 1 | (0-3) |
| ChE 252 Intro Trans Phen or ME 317 Fluid Mechanics | 3 | (3-0) |
| NE 230 Nucl Engr Calc | 3 | (3-0) |
| Communications Elective | 3 | (3-0) |
| | 16 | (15-3) |

THIRD YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Math 312 Adv Engr Math I | 3 | (3-0) |
| Physcs 330 Atom/Nucl Physcs | 3 | (3-0) |
| ChE/ME 301 Thermodynamics | 3 | (3-0) |
| ChE 311 Unit Operation I or ME 320 Heat Transfer | 3 | (3-0) |
| NE 322L Intro Nucl Engr Meas | 3 | (2-3) |
| | 15 | (14-3) |

Second Semester

| | | |
|---|---|---|
| ChE 314L Chem Engr Lab I | 2 | (0-6) |
| ChE 370 Engr Mtls Science | 3 | (3-0) |
| NE 323L Nucl Detection Meas | 3 | (2-3) |
| °Tech elective | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| Unrestricted elective | 3 | (3-0) |
| | 17 | (14-9) |

FOURTH YEAR
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| ChE 450 Chem Engr Econ | 3 | (3-0) |
| ChE/NE 451 Senior Seminar | 1 | (1-0) |
| NE 410 Nuc Rctr Theory I | 3 | (3-0) |
| °Tech elective | 3 | (3-0) |
| °NE elective | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| | 16 | (16-0) |

Second Semester

| | | |
|---|---|---|
| NE 413L Nucl Engr Lab I | 3 | (1-6) |
| NE 465 Reactor Technology | 3 | (3-0) |
| °Tech elective | 3 | (3-0) |
| °NE elective | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| Unrestricted elective | 3 | (3-0) |
| | 18 | (16-6) |

† Technical elective: These electives must be developed in consultation with an option committee adviser to comprise a meaningful sequence for a stem specialization. At least 9 hours **must** be taken from engineering, mathematics, and natural or physical sciences, to include ordinary differential equations, engineering design or analysis, and **two** experimental engineeing laboratories.

‡ Unrestricted elective.

* Reduced for students placed ahead in freshman mathematics and/or English.

## Associate of Applied Science in Electronic Technology and in Laser/Electro-Optic Technology.

The College of Engineering offers, in cooperation with the Albuquerque Technical Vocational Institute (TV-I), two Associate of Applied Science (AAS) degree programs, one in Electronic Technology and one in Laser/Electro-Optic Technology. These two year associate degree programs prepare students for careers as electronic and laser technicians.

Technicians provide a support function for engineers and are generally responsible for the construction, repair, and maintenance of equipment designed by engineers. The industrial demand for associate-degree level electronic and laser technicians is excellent. The training of technicians involves more hands-on experience in the laboratory then the training of engineers and less mathematics and basic sciences.

* Reduced for students placed ahead in, freshman mathematics and/or English.

° Technical electives and NE electives will be developed in consultation with an option adviser to comprise a meaningul sequence for specialization. At least one NE elective must be chosen from NE 435 or NE 485.

**Admissions.** To be admitted to the AAS degree programs, one must: °°

1. Complete the four trimesters for the respective technical programs at TV-I satisfactorily. **
2. Obtain a letter of recommendation for the AAS program from the appropriate department at TV-I.
3. Complete a UNM application and supply a TV-I transcript.

**Degree Requirements**

1. Completion of either the Electronic Technology or Laser/Electro-Optic Technology, as appropriate, program at TV-I. See Albuquerque Technical-Vocational Institute catalog for detailed curriculum and course descriptions. A block of 43 credit hours is given for the technical programs at TV-I.
2. A grade-point average of 2.0 or better on all work taken at the University of New Mexico which is counted towards one of the above degrees. At least 15 credit hours of resident credit at UNM is required.
3. Recommendation for the degree by the appropriate faculty at the University of New Mexico.

The student should contact the Technology adviser, Department of Electrical and Computer Engineering, at the University of New Mexico for further information.

**Curriculum for the AAS Degrees in Electronics and Laser/Electro-Optics**

Technical-Vocational Institute Course Work

Four trimesters of technical course work for Electronics or Laser/Electro-Optics programs 43 credits

University of New Mexico Course Work

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Engl 101 Wrtg w/rdgs in Expos | 3 | (3-0) |
| Speech 240 Comm in Org | 3 | (3-0) |
| +Social Science/Hum elec | 6 | (6-0) |
| ++Phys 151 Gen Phys | 3 | (3-0) |
| ++Phys 152 Gen Phys | 3 | (3-0) |
| ++Math 180 Calc for Soc/Bio Sci I | 3 | (3-0) |
| ++Math 181 Calc for Soc/Bio Sci II | 3 | (3-0) |
| Engr 120L Comp Prog for Engr | 3 | (3-0) |
| Engr 122L Intro Engr Meth/Lab | 3 | (3-0) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| | 33 | (33-0) |
| Total | | 76 hours |

## Associate of Science in Pre-Engineering

The Associate of Science in Pre-Engineering is a two year degree requiring the completion of basically the freshman and sophomore years of engineering. It includes the general background courses in mathematics and the sciences and an introduction to the concepts and methods of engineering. It represents a halfway point for those seeking to obtain the professional degree in engineering. This program can serve as a useful part of the preparation of students who plan to study law, business, medicine, or other fields where the general concepts and thought processes of engineering are applicable. Students may also continue their studies in the more specialized areas of engineering, leading to one of the bachelor's degrees in engineering.

°° Only graduates of the TV-I programs 1975 and after, are eligible.

** It is possible to complete the UNM part of the AAS program before the TV-I part. However, students admitted first to UNM with less than 26 hrs. of transfer credit from other academic institutions, will have to satisfy the regular admission procedures required of beginning freshman (see p. 10). An independent AAS program offered entirely by the University of New Mexico is currently under consideration. Consult the College of Engineering Office for status of this program.

\+ See approved list of social science/humanities electives

++ Very little credit for technical courses in the AAS degree program are allowed towards an engineering degree program. Students contemplating continuing their studies for an engineering degree should substitute physics 160 and 161 for 151 and 152, and math 16 and 163 for math 180 and 181.

This associate program is not a professional degree and does not prepare one for specific job opportunities; rather, it provides a broad educational foundation on which to build a future career through further education or work experience. It will be useful to those studying part time and for those who have substantial pre-college work to accomplish. The student who is interested in a two-year program that will provide specific work skills should consider an appropriate program in technology.

**Admission**

The admission requirements for this program are the same as those for University College, p. 30.

**Degree Requirements**

1. Completion of all courses in the curriculum (or equivalent), a total of 62 hours.
2. A grade-point average of 2.0 or better on all work taken at The University of New Mexico which is counted toward this degree.
3. Recommendation for the degree by the appropriate faculty at The University of New Mexico.

**Curriculum for the Associate of Science in Pre-Engineering**

FIRST YEAR

First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Engl 101 Wrtg w/Rdgs in Expos | 3 | (3-0) |
| Chem 121L Gen | 4 | (3-3) |
| Engr-G 115L Intro to Engr | 1 | (1-1) |
| Engr-G 122L Intro to Engr Mthds | 3 | (3-3) |
| or | | |
| Engr-G 120L Comp Prog for Engr | 3 | (2-2) |
| Math 162 Calculus I | 4 | (4-0) |
| | 15 | (12-9) |

Second Semester

| | | |
|---|---|---|
| Engr-G 120L Comp Prog for Engr | 3 | (2-2) |
| or | | |
| Engr-G 122L Intro to Engr Mthds | 3 | (3-3) |
| Physcs 160 Gen | 3 | (3-0) |
| Math 163 Calculus II | 4 | (4-0) |
| H&SS elective | 3 | (3-0) |
| Science elective | 3 | (3-0) |
| | 16 | (15-2) |

SECOND YEAR

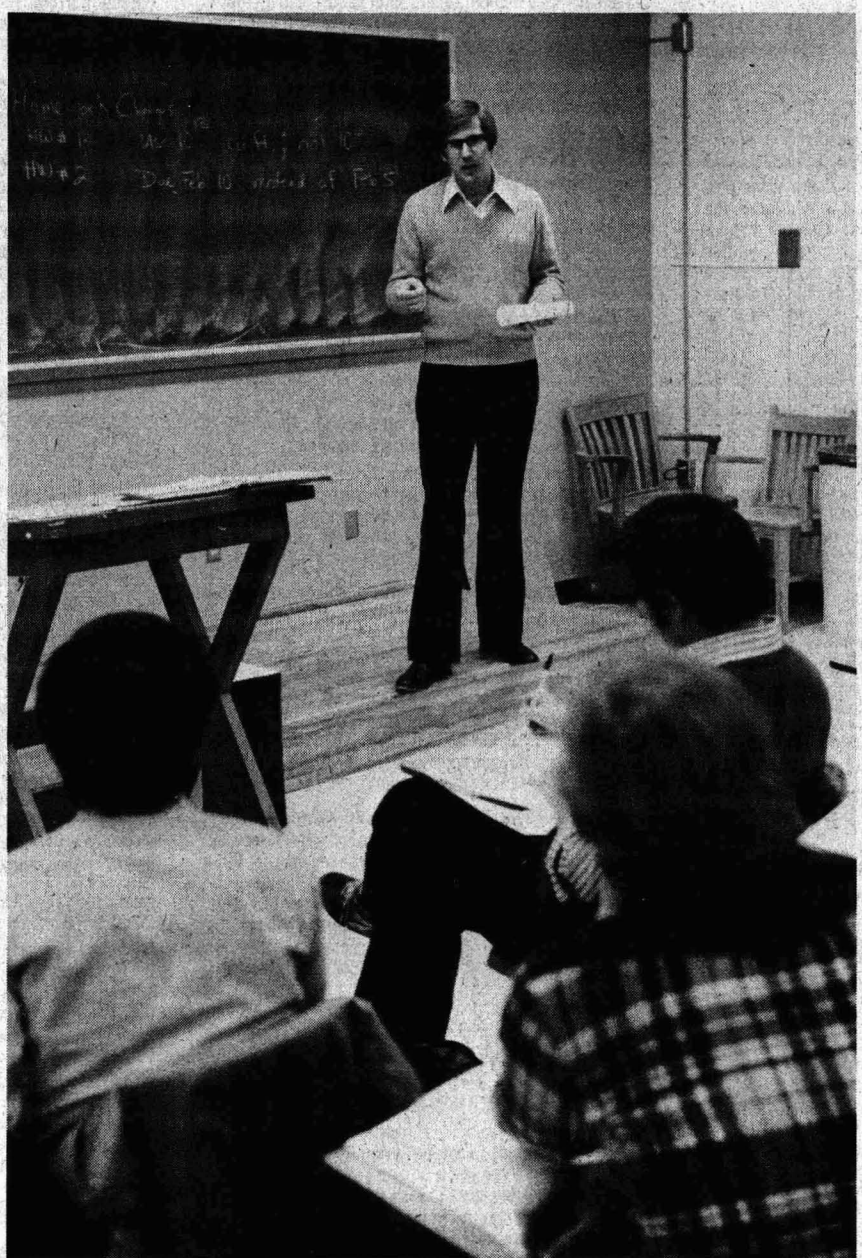
First Semester

| | Cr. | Hrs. Lect.-Lab. |
|---|---|---|
| Math 264 Calculus III | 4 | (4-0) |
| Physcs 161 Gen | 3 | (3-0) |
| CE 202 Engr Statics | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| *Tech elective | 3 | (3-0) |
| | 16 | (16-0) |

Second Semester

| | | |
|---|---|---|
| Math 316 App Ord Diff Eq | 3 | (3-0) |
| Physcs 262 Gen | 3 | (3-0) |
| EECE 203 Circuit Analysis I | 3 | (3-0) |
| H&SS elective | 3 | (3-0) |
| *Tech elective | 3 | (3-0) |
| | 15 | (15-0) |

Students who score 25 or above in the English area of the ACT are excused from Engl 101 (3 hours); those who are placed in Math 163 are excused from Math 162 (4 hours).



# COLLEGE OF FINE ARTS

THIS SECTION of the catalog is designed to provide information about the College of Fine Arts and to be of help to the student who plans to major in art, music, or theatre arts.

The nature of the arts is such that people choose to enter these fields for a variety of reasons and with many goals in mind. Recognizing this, we have designed a number of different programs. Our basic approach is to describe alternatives rather than to state requirements. Some programs are necessarily more structured than others. An example would be the major in music education, for in order to qualify to teach in the public schools, a number of specific courses must be taken. Other programs are entirely open and flexible. Your choice of a curriculum will determine the degree you receive when you complete it. The name of the degree thus serves to describe the kind of program you have taken.

Programs offered by the College are described below. If you feel you need advice in selecting a program of studies, we encourage you to talk to your department chairperson or to an adviser in the College of Fine Arts Advisement Center, Room 1103.

You should also read carefully the general academic regulations of the University (pp. 24-29) and the listing of courses offered by the College. These are under eight headings:



In reading the course descriptions, note carefully the prerequisites that are specified because these determine the sequence in which courses may be taken. Also note that not all courses are offered every semester. The listings in this catalog indicate the general pattern in which the courses are offered, but you will still need to consult the current schedule of classes in order to find out specifically what is to be given each semester.

## Admission

Due to limitations of facilities and faculty, enrollment in certain curricula offered by the College of Fine Arts is limited. Since the number of well-qualified students seeking admission to these curricula considerably exceeds the number that can be accommodated, successful completion of the minimum requirements as stated below is no guarantee of admission. Applications for admission in some fields of study are screened on the basis of auditions, interviews, and/or evaluations of portfolios, and selection of successful applicants is made on a competitive basis.

If you come to the University as a freshman, you will first be enrolled in the University College. The purposes of this College and the procedures you must follow in order to transfer to a degree-granting college, such as the College of Fine Arts, are described on p. 27.

**Admission from University College.** To be eligible for transfer to the College of Fine Arts, you must meet the requirements listed below:

1. Completion of 26 hours of earned credit.
2. (a) A scholarship index of at least 2.5 on all hours attempted, or
   (b) A scholarship index of at least 2.5 on all hours attempted in your previous two semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous two semesters, a scholarship index of at least 2.5 shall be required on all work attempted in as many previous consecutive semesters as are necessary to bring your total hours attempted to at least 30.
3. Competency in English writing as demonstrated by
   (a) Achieving a score of 25 or higher on the English section of the ACT examination, or
   (b) Completion of English 101 with a grade of C or better, or
   (c) A score of 55 or better on the College Composition Test of the CLEP.
4. 9 to 12 completed credit hours in course work in the major area.

If you plan to major in one of the departments in the College of Fine Arts you should transfer from University College as soon as the above requirements have been completed. To apply for transfer from University College, go to the College of Fine Arts Advisement Center for initiation of the screening procedures described in the opening paragraph above.

**Transfer from Other Colleges in this University.** Transfer to the College of Fine Arts from another degree-granting college of The University of New Mexico requires a scholarship index of 2.5 on all work attempted while you were enrolled in the other degree-granting college(s), in addition to satisfaction of all requirements for transfer from the University College.

**Transfer from Other Accredited Institutions.** If you are transferring to The University of New Mexico after having studied at another college or university, you may be eligible for admission directly into the College of Fine Arts. In general, the screening procedures and admission requirements are the same as those described above for admission from University College. Some students transferring from other institutions known for their rigorous grading standards may, however, be admitted upon the basis of a scholarship index above 2.0 but below 2.5; a portfolio or audition may be required.

**Special Admission.** A limited number of gifted students (never in excess of 5% of the College's total enrollment) may be admitted without regard to the above listed requirements upon special recommendation of a department chairperson and with approval of the Dean of the College of Fine Arts and its Committee on Student Standing. If you feel that you might qualify for special admission, please inquire in the College of Fine Arts Advisement Center.

## Graduation Requirements

Most of the requirements for graduation are listed under the specific curricula described below. A few requirements, however, are common to **all** of the College's programs, and these are stated here:

1. A minimum of 128 hours is required in all curricula. Of these, at least 40 hours must be completed in courses numbered 300 or above.
2. To receive a degree, you must have a scholarship index of 2.0 or higher. You must also have achieved a grade average of 2.0 or higher on all hours attempted while enrolled in the College of Fine Arts.
3. No more than 4 hours of physical education activity courses may be counted toward a degree.

At the beginning of the first semester of your senior year, you must complete an application for degree. This application is made in the Advisement Center, College of Fine Arts. If you fail to file an application, the receipt of your degree may be delayed.

**Major and Minor Studies.** A student may choose a minor or a second major from among those majors and minors approved by the College of Arts and Sciences (see page 35). A minor may be selected from any program in the College of Fine Arts. Fulfilling the requirements for two majors may extend the hours required for a degree beyond 128, but will not necessarily constitute a second degree. If the minor or second major is outside the College of Fine Arts, a check for requirements must be made at the time the student applies for a degree.

**Two Undergraduate Degrees.** Students wishing a second undergraduate degree in the College of Fine Arts must complete a minimum of 30 hours in addition to those required for the first degree, and fulfill all requirements for the second degree. For a student in the College of Fine Arts the possibilities of a second degree are limited due to the great amount of time required for the practice of the fine arts. If a second degree is desired, students must consult with a department adviser in the College Advisement Center and with the Assistant Dean for final approval. The awarding of a degree will be consistent with the general academic regulations stated on page 28.

## Scholastic Standards

The curricula that lead to the degrees of Bachelor of Fine Arts and Bachelor of Music are **preprofessional** curricula. They are designed for students who plan to enter graduate school for the professional study of the fine arts. Most graduate schools require a grade average of 3.0 in the student's major field of study as a condition of admission. For this reason, you should enter one of these curricula **only** if you are willing to make a firm commitment to work rigorously and intensively at the highest level of your creative and intellectual capacities. **The faculty reserves the right to require any student whose grades fall substantially below 3.0 in her/his major to transfer to another program.**

No student may undertake a program in excess of 20 hours during the regular semester and 10 hours in summer session without prior written permission of the Dean of the College. Enrollment in more than the maximum hours without such prior permission will lead to disenrollment.

If your grades are low or if you have had academic difficulties in the past, we urge you to consult closely with an adviser in the College of Fine Arts Advisement Center.

## DEPARTMENTAL HONORS

Students interested in graduating with departmental honors should read carefully the guidelines on p. 29 of the catalog. However, interested students in the College of Fine Arts should apply first through the College of Fine Arts Advisement Center no later than the end of their junior year.

Minimum requirements for graduation with departmental honors in the college of Fine Arts are as follows: (a) an overall grade point average of 3.5 on work completed on a minimum of 60 hours in residence at the university; (b) no fewer than 6 credit hours in senior thesis or special courses, as approved by the respective departments, which involve independent study beyond normal requirements.

## Special Facilities in the College of Fine Arts

Instruction in the fine arts is enriched by the University Art Museum; several outstanding performance series in Popejoy Hall, Keller Hall and Rodey Theatre; a Fine Arts Library containing more than 50,000 volumes and a listening center with an extensive collection of tapes and records; and a Fine Arts Slide Library containing 250,000 slides.

## Curricula

### Art

The majors in art studio and art history and the curricula in teacher education offered by the College of Fine Arts are described below. The major and minor in art offered by the College of Arts and Sciences are described on p. 35.

Most of the requirements in these majors are set forth below. Please note that in all programs you must also satisfy general College and University requirements for graduation.

**Preprofessional Curriculum.** The preprofessional curriculum leading to the Bachelor of Fine Arts is designed for students who anticipate further study at the graduate level. If you enroll in this program, you should read carefully the paragraph on p. 54 (Scholastic Standards) which permits the faculty to exclude from the program any student whose grade average in his/her major field of study falls substantially below 3.0. Studio courses and art history courses are both part of the major field of study.

If you wish to take studio courses without the concentration and commitment that is implicit in this curriculum, you are advised to follow a program of study leading to the degree of Bachelor of Arts in Fine Arts with a studio emphasis (see below). Also, you may take a number of studio courses as part of the art education curriculum leading to teacher certification. The Art Department adviser will help you select the program that best suits your needs.

Minimum requirements for the program leading to the B.F.A. degree are as follows. Please note that one of the requirements is that at least 9 hours of instruction is at the 400 level. Students whose performance does not qualify them for the B.F.A. program may complete their work in the B.A. program or transfer to another degree program entirely.

The program leading to the B.F.A. is as follows:

1. Courses outside the major:
   a. 30 hours selected from courses offered by departments of the College of

*Courses in the General Honors Program may be used to satisfy Arts and Sciences requirements except for the specific courses stated above.

Arts and Sciences, of which at least 9 hours must be in English, including 102; 6 hours of History 101, 102;* and — 30 hours
b. 6 hours selected from other department of the College of Fine Arts (dance, film, fine arts, music, and theatre arts) or from the School of Architecture and Planning; and — 6 hours
c. 12 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 12 hours
— 48 hours

2. Major in art:
a. 18 hours in art history (including 150 and 250, to be taken in the freshman and sophomore years); and — 18 hours
b. 52 hours in studio courses, including art studio 106, 121, 122 and 423 and a minimum of 9 hours at the 400 level. Many areas of special study require specific sequences of courses and corequisites which you must observe. The department adviser can inform you of these. — 52 hours
3. Additional courses in any field, including art. — 10 hours
Total — 128 hours

**Tutorial Program.** At the end of six semesters (the end of the junior year) all students in the B.F.A. and B.A. in F.A. programs with an overall 3.2 GPA whose portfolio is acceptable to the departmental tutorial committee, may wish to apply to enter the tutorial program.

The student will work with his or her tutor in a regular program of individual instruction which does not confine itself to a particular studio discipline but emphasizes thought rather than techniques, and theoretical and humanistic breadth rather than narrow specialization. The student will take 6 to 12 hours of tutorial instruction preferably with more than a single tutor.

Before becoming eligible for the tutorial program the student must have taken a minimum of 90 hours of preparation, including Art History 150 and 250, a minimum of 18 hours (usually more, including corequisites) of work in a specific studio area, 24 hours in courses offered by departments in the College of Arts and Sciences (including 9 hours of English), and Art Studio 423.

**General (Liberal Arts) Curriculum**

A major in **art history** is offered under the general curriculum. It is also possible within this curriculum to pursue a major in **studio art** that is less specialized than the preprofessional (B.F.A.) curriculum. These two programs, both of which lead to the Bachelor of Arts in Fine Arts, are as follows:

ART HISTORY EMPHASIS

1. Courses outside the major:
a. 39 hours selected from courses offered by departments of the College of Arts and Sciences, of which at least 9 hours must be in English, including 102; as many semesters of one foreign language as are necessary for completion of the fourth semester course in that language; 6 hours of History 101, 102; and — 39 hours
b. 6 hours selected from other departments of the College of Fine Arts (dance, film, fine arts, music, and theatre arts) or from the School of Architecture and Planning; and — 6 hours
c. 15 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 15 hours
— 60 hours

2. Major in art history:
a. 33 hours in art history courses including 150 and 250, and a minimum of 15 hours in courses numbered 300 or above; and — 33 hours
b. 15 hours in studio courses, including Art Studio 106, 121 and 122 — 15 hours
3. Additional courses in any field, including art. — 20 hours
Total — 128 hours

STUDIO EMPHASIS

1. Courses outside the major:
a. 39 hours selected from courses offered by departments of the College of Arts and Sciences, of which at least 9 hours must be in English, including 102; 6 hours of History 101,102; and — 39 hours
b. 6 hours selected from other departments of the College of Fine Arts(dance, film, fine arts, music, and theatre arts) or from the School of Architecture and Planning; and — 6 hours
c. 15 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 15 hours
— 60 hours

2. Major in art:
a. 15 hours in art history courses, including 150 and 250; and — 15 hours
b. 33 hours in studio courses, including Art Studio 106, 121, and 122. — 33 hours
3. Additional courses in any field, including art. — 20 hours
Total — 128 hours

**Curricula in Teacher Education.** If you are planning to become a teacher of art in the public schools, two alternative programs are offered. The College of Education offers a curriculum leading to the degree of Bachelor of Arts in Education (see p ); the College of Fine Arts offers a preprofessional curriculum leading to the degree of Bachelor of Fine Arts. In the program leading to the B.F.A. (see above) you must complete a total of 70 hours in Art Department courses, as well as all courses necessary for certification. For this reason it is essential that you consult with the Art Department adviser as soon as possible. Only with careful planning is it possible to complete a B.F.A. with certification within a four-year period.

Please note also that all students entering teacher certification programs, regardless of the college in which they may enroll, are required to meet the screening requirements for admission to such programs, as described in the College of Education section of this catalog.

## Music

**NASM Membership.** The University of New Mexico is a member of the National Association of Schools of Music. Requirements for entrance and graduation as set forth in this catalog are in accordance with published requlations of the National Association of Schools of Music.

**Music Majors.** Majors in music are described below as are minors. In addition to stated course requirements, one must satisfy general College and University requirements for graduation.

**Preprofessional Curriculum**

Programs in music performance; music pedagogy; and music theory and composition are available leading to the Bachelor of Music and comprising a total of 128 hours. If you enroll in any one of these programs, read carefully the paragraph on p. 54 (Scholastic Standards) which permits the faculty to exclude from the program any student whose grade average in his/her major field falls substantially below 3.0. Furthermore, the faculty reserves the right to disqualify from further enrollment or participation in departmental programs:

1. Students who fail to demonstrate reasonable progress in their personal professional development in music or
2. Students whose conduct reveals a persistent inability to work effectively with others or an unwillingness to adhere to generally recognized standards of professional behavior.

A handbook describing specific departmental requirements relating to recitals; special examinations; auditions, and similar matters may be obtained from the Music Department office. All transfer students will be given a theory, eartraining, and sight-singing proficiency examination for the purpose of determining competency in these areas. If test results reveal deficiencies, transfer students will be required to remove such by enrolling and successfully completing one or more semesters of the theory curriculum.

All students in any program leading to the B.M. degree must complete the following curriculum:

1. Courses outside the major:
a. 30 hours selected from courses offered by departments of the College of Arts and Sciences, of which at least 9 hours must be in English, including 102; 6 hours of History 101, 102;* and — 30 hours
(Note: Majors in vocal performance and vocal pedagogy must complete 18 hours in some combination of French, German, and Italian.)
b. 6 hours selected from other departments of the College of Fine Arts (art, art history, dance, film, fine arts, and theatre arts) or from the School of Architecture and Planning; and — 6 hours
c. 12 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 12 hours
— 48 hours

2. Major in music, including:
a. six semesters of 101 Concert Music with a grade of CR.
b. 24 hours in applied music:
c. 24 hours in music theory, including 105, 106, 107, 108, 205, 206, 207, 208, 309, 310, 453, and either 405, or 406;
d. 8 hours in music history, including 261, 262, and 449;
e. 2 hours in conducting;
f. 8 hours in ensemble (see departmental handbook); and
g. 14 additional hours (the distribution of these hours will vary according to your major, such as keyboard performance, instrumental performance, etc.; specific requirements are given below). — 80 hours
Total — 128 hours

Keyboard performance:
4 hours in applied music
2 hours in music theory (counterpoint)
8 hours in music electives

Instrumental performance:
8 hours in applied music
2 hours in ensemble
4 hours in music electives

Vocal performance:
4 hours in applied music
2 hours in music history
2 hours in diction for singers
6 hours in music electives

Keyboard pedagogy:
4 hours in applied music
4 hours in music pedagogy
6 hours in music electives

Instrumental pedagogy:
8 hours in applied music
2 hours in music pedagogy
4 hours in music electives

Vocal pedagogy:
6 hours in applied music
4 hours in music pedagogy
2 hours in diction for singers
2 hours in music electives

For majors in theory and composition, the number of hours in applied music (par. 2a above ) is reduced from 24 to 14. Additional hours (par. 2f above) are raised from 14 to 24 and distributed as follows:
10 hours in music theory
2 hours in conducting
4 hours in music history
8 hours in music electives

**General (Liberal Arts) Curriculum**

A major in music history and literature is offered leading to the Bachelor of Arts in Fine Arts. It includes a thorough preparation in music theory, a limited amount of applied music, and is designed for students who want a broad

understanding of music in relation to other academic disciplines.

All transfer students will be given a theory, ear-training, and sight-singing proficiency examination for the purpose of determining competency in these areas. If test results reveal deficiencies, transfer students will be required to remove such by enrolling and successfully completing one or more semesters of the theory curriculum.

1. Courses outside the major:
   a. 39 hours selected from courses offered by departments of the College of Arts and Sciences, of which at least 9 hours must be in English, including 102; as many semesters of one language as are necessary for completion of the fourth semester course in that language; 6 hours of Hist 101, 102;* and — 39 hours
   b. 6 hours selected from other departments of the College of Fine Arts (art, art history, dance, film, fine arts, and theatre arts) or from the School of Architecture and Planning; and — 6 hours
   c. 15 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 15 hours
   — 60 hours
2. Major in music, including
   a. six semesters of 101 Concert Music with a grade of CR;
   b. 24 hours in music theory (see curriculum p. 155);
   c. 8 hours in music history (see curriculum p. 155); plus 10 hours of other courses in music history;
   d. 8 hours in applied music, including 4 hours in piano and 4 elective hours;
   e. 8 hours in ensemble; and
   f. 10 hours in music electives — 68 hours

   Total — 128 hours

**Music Minor**

For a minor in music: 20 hours, including a total of 4 hours in theory and 4 hours in ear-training; 6 hours selected from 139-140 or 371-373; 4 hours in applied music; and 2 hours of electives in music.

**Curriculum in Music Education**

Students completing the requirements and curriculum stated below will receive the Bachelor of Music Education degree and will be certified to teach music in grades 1 through 12 in the state of New Mexico. Official acceptance to the degree program is granted only after successful completion of the following:

1. Music Education Screening (consult Department of Music Handbook).
2. Admission to a Teacher Education Program (see College of Education, "Admission to a Teacher Education Program").
3. Admission to the College of Fine Arts, (see College of Fine Arts "Admission").

Before completing 64 hours, students must attempt both the Voice Proficiency Examination and Piano Proficiency Examination (consult Department of Music Handbook). Should a student fail any portion of either examination, he/she must enroll in the appropriate voice or piano course the subsequent semester.

Student teaching can only be accomplished during the fall semester of any year. To be eligible for the student teaching program, the following must be accomplished:

1. Completion of all prerequisite courses (see Department of Music Handbook).
2. A GPA in music courses of 2.5 and an overall GPA of 2.0.

The required recital will normally be given during the last semester in residence.

Students majoring in music education must consult their assigned adviser prior to registering each semester. Failure to do so may result in disqualification from further pursuit of the BME degree.

All transfer students will be given a theory, ear-training, and sight-singing proficiency examination for the purpose of determining competency in these areas. If test results reveal deficiencies, transfer students will be required to remove such by enrolling and successfully completing one or more semesters of the theory curriculum.

**Bachelor of Music Education Degree**

VOCAL TRACK
FRESHMAN YEAR
First Semester

| | Hrs. |
|---|---|
| Engl 101 Wrtgs/Rdgs in Exposition | 3 |
| Hist 101 Western Civilization | 3 |
| Mus 101 Concert Music | 0 |
| Mus 105 Music Theory II | 2 |
| Mus 107 Ear-Training II | 2 |
| Mus 243 Concert Choir | 1 |
| Mus 209 Diction for Singers | 2 |
| Mus Ed 194 Introduction to Music Education | 1 |
| *Piano or Voice | 1 |
| CONCENTRATION | 1 |
| | 16 |

Second Semester

| | |
|---|---|
| Engl 102 Analytical Wrtg | 3 |
| Hist 102 Western Civilization | 3 |
| SpCom 270 Communication for Teachers | 3 |
| Mus 101 Concert Music | 0 |
| Mus 106 Music Theory III | 2 |
| Mus 108 Ear-Training III | 2 |
| Mus 243 Concert Choir | 1 |
| *Piano or Voice. (Guitar Concentrates take piano and Voice, and no 155.) | 1 |
| Mus 155 WW II or Guitar | 1 |
| CONCENTRATION | 1 |
| | 17 |

SOPHOMORE YEAR
First Semester

| | |
|---|---|
| Psyc 101 Gen. Psyc. I | 3 |
| FINE ARTS ELECTIVE | 3 |
| Mus 101 Concert Music | 0 |
| Mus 205 Music Theory IV | 2 |
| Mus 207 Ear-Training IV | 2 |
| Mus 261 History of Music I | 3 |
| Mus 243 Concert Choir | 1 |
| *Piano or Voice. (Guitar Concentrates take Piano and Voice, and no 155 course.) | 1 |
| Mus 155 High Brass, or High Strings | 1 |
| CONCENTRATION | 1 |
| | 17 |

Second Semester

| | |
|---|---|
| FINE ARTS ELECTIVE | 3 |
| EdFdn 290 Fdns of Educ | 3 |
| Mus 101 Concert Music | 0 |
| Mus 206 Music Theory V | 2 |
| Mus 208 Ear-Training V | 2 |
| Mus 262 History of Music II | 3 |
| Mus 243 Concert Choir | 1 |
| *Piano or Voice. (Guitar concentrates take Piano and Voice, and no 155 course.) | 1 |
| Mus. 155 WW II or Guitar | 1 |
| CONCENTRATION | 1 |
| | 17 |

JUNIOR YEAR
First Semester

| | |
|---|---|
| Science Elective, with Lab | 4 |
| Mus 101 Concert Music | 0 |
| Mus 309 Form and Analysis | 2 |
| Mus 363 Conducting | 2 |
| Mus 453 Orchestration | 2 |
| MusEd 294 Tchg. Mus. Elem. Sch. | 3 |
| Mus 243 Concert Choir | 1 |
| Mus 155 High Brass or High String | 1 |
| CONCENTRATION | 1 |
| | 16 |

Second Semester

| | |
|---|---|
| Science Elective, with Lab | 4 |
| EdFdn 303 Hum. Growth and Dev. | 3 |
| Mus 101 Concert Music | 0 |
| Mus 310 Form and Analysis | 2 |
| Mus 364 Choral Conducting | 2 |
| MusEd 446 Sec. Sch. Mus. | 3 |
| Mus 243 Concert Choir | 1 |
| Mus 155 WW II or Guitar, (Guitar Concentrates take WW II). | 1 |
| CONCENTRATION | 1 |
| | 17 |

SENIOR YEAR
First Semester
Music Education Block:

| | |
|---|---|
| /MusEd 313 Tchg. Choral Mus. in Secondary School | 2 |
| /MusEd 315 Tchg. Inst. Mus in Secondary School | 2 |
| /MusEd 451 Fdns. Mus. Behavior | 3 |
| /Mus 243 Concert Choir | 1 |
| /Mus CONCENTRATION | 1 |

Internship:

| | |
|---|---|
| //MusEd 400 Stdnt Tchg-Elem | 3 |
| //MusEd 461 Stdnt Tchg-Sec | 3 |
| | 15 |

**SECOND SEMESTER**

| | |
|---|---|
| Eng Lit Elective | 3 |
| MusEd 493 Reading in the Content Area | 3 |
| Mus 243 Concert Choir | 1 |
| Mus. or Mus. Ed. Electives | 4 |
| CONCENTRATION (recital) | 2 |
| | 13 |

**BACHELOR OF MUSIC EDUCATION DEGREE**
**INSTRUMENTAL TRACK**
FRESHMAN YEAR
FIRST SEMESTER

| | HRS. |
|---|---|
| Eng 101 Wrtgs/Rdgs in Expos. | 3 |
| Hist 101 Western Civilization | 3 |
| Mus 101 Concert Music | 0 |
| Mus 105 Music Theory II | 2 |
| Mus 107 Ear-Training II | 2 |
| #Mus 233 ORCH. or MUS. 241 BAND | |
| Mus. Ed. 194 Intro to Mus. Ed. | |
| *Piano (Piano Concentrates take WW I, High Brass, or High Strings.) | |
| *Voice | |
| CONCENTRATION | 1 |

**SECOND SEMESTER**

| | |
|---|---|
| Eng 102 Analytical Wrtg | |
| Hist 102 Western Civilization | |
| SpCom 270 Communication for Tchrs | |
| Mus 101 Concert Music | |
| Mus 106 Music Theory III | |
| Mus 108 Ear-Training III | |
| Mus 233 ORCH or MUS. 241 BAND | |
| *Piano (Piano Concentrates take WW II, Low Brass, Low Strings, or Percussion.) | |
| Mus 155 WW II Low Brass, Low Strings, or Percussion | |
| CONCENTRATION | 1 |

**SOPHOMORE YEAR**
**FIRST SEMESTER**

| | |
|---|---|
| Psych 101 Gen. Psych. I | |
| FINE ARTS ELECTIVE | |
| Mus 101 Concert Music | |
| Mus 205 Music Theory IV | |
| Mus 207 Ear-Training IV | |
| Mus 261 History of Music I | |
| #Mus 233 ORCH. or MUS. 241 BAND | |
| *Piano (Piano concentrates take WWI, High Brass, or High Strings.) | |
| Mus 155 High Brass, High Strings, or WW I. | |
| CONCENTRATION | — |

**SECOND SEMESTER**

| | |
|---|---|
| EdFdn 290 Fdns. of Educ. | |
| Mus 101 Concert Music | |
| Mus 206 Music Theory V | |
| Mus 208 Ear-Training V | |
| Mus 262 History of Music II | |

* And/or successful completion of the proficiency exam.
/ to be taken first half of semester.
// to be taken second half of semester

| | |
|---|---|
| Mus 233 ORCH. or MUS. 241 BAND | 1 |
| *Piano (Piano concentrates take Low Brass, Low Strings, WW II, or Percussion.) | 1 |
| Mus 155 (take two) Low Brass, Low Strings, WW II, Percussion or Electives for Piano Concentrates | 1+1 |
| CONCENTRATION | 1 |
| | 15 |

**JUNIOR YEAR**
**FIRST SEMESTER**

| | |
|---|---|
| SCIENCE ELECTIVE, with Lab | 4 |
| Mus 101 Concert Music | 0 |
| Mus 309 Form and Analysis | 2 |
| Mus 363 Conducting | 2 |
| Mus 453 Orchestration | 2 |
| #Mus 233 ORCH. or MUS. 241 BAND | 1 |
| MusEd 294 Tchg. Mus. in the Elem. Sch. | 3 |
| Mus. 155 (take two), High Brass, High Strings or WW I | 1+1 |
| CONCENTRATION | 1 |
| | 17 |

**SECOND SEMESTER**

| | |
|---|---|
| Science Elective, with Lab | 4 |
| EdFdn 303 Hum. Growth and Dev. | 3 |
| Mus 101 Concert Music | 0 |
| Mus 310 Form and Analysis | 2 |
| Mus 365 Inst. Conducting | 2 |
| Mus 233 ORCH. or MUS. 241 BAND | 1 |
| Mus 446 Secondary School Mus. | 3 |
| Mus 155 Low brass, Low Strings, WW II, or Percussion | 1 |
| CONCENTRATION | 1 |
| | 17 |

**SENIOR YEAR**
**FIRST SEMESTER**
**MUSIC EDUCATION BLOCK:**

| | |
|---|---|
| /MusEd 313 Tchg. Choral Music in Secondary Schools | 2 |
| /MusEd 315 Tchg. Inst. Music in Secondary Schools | 2 |
| /MusEd 451 Fdns. of Music Behavior | 3 |
| /Mus 155 Instrumental Lab | 1 |
| /Mus 233 Orch or Mus 241 Band | 1 |
| /CONCENTRATION | 1 |

**INTERNSHIP:**

| | |
|---|---|
| //MusEd 400 Stdnt Tchg-Elem | 3 |
| //MusEd 461 Stdnt Tchg-Sec | 3 |
| | **16** |

**SECOND SEMESTER**

| | |
|---|---|
| Fine Arts Elective | 3 |
| English Literature Elective | 3 |
| Mus. Ed. 493 Reading in the Content Area | 3 |
| Mus. 233 Orch or Mus. 241 Band | 1 |
| Mus. or Mus. Ed. Electives | 2 |
| CONCENTRATION (Recital) | 2 |
| | 14 |

**THE MUSIC EDUCATION MINOR**

This program is only available to students majoring in Elementary Education. Students electing this program must pass the piano proficiency examination and the voice proficiency examination (consult the Department of Music Handbook for details).

For a minor in music education: 22 hours, including 4 hours in theory (105 & 106); 4 hours in ear-training (107 & 108); 4 hours in piano; 2 hours in voice; 1 hour in a major choral ensemble; 2-3 hours of music education electives to be selected from 293, 297, or 271; 3 hours of electives in music history or music appreciation to be selected from 139, 140, 371 or 373; and 3-4 hours of free electives in music or music education.

## Theatre Arts

The majors in theatre and dance offered by the College of Fine Arts are described below. The Department also offers the student the opportunity for structured studies in film and television. Students interested in teacher certification are directed to the major in theatre described under the heading "Curriculum in Teacher Education."

* And/or successful completion of the proficiency exam. Wind and Percussion concentrates must enroll in MUS. 241 BAND each Fall semester for four year.
/ To be taken first half of semester.
// To be taken second half of sememster.

The programs of studies in theatre and dance often include production work as an integral part of classroom instruction and students are expected to participate in all phases of such work that may occur in the required courses.

In the department, the progression of course levels from beginning to advanced is carefully structured. The faculty places each student at a level of instruction based on both the student's ability and achievement.

In addition to the course requirements listed for the majors, you must satisfy general college and university requirements for graduation. Furthermore, the faculty reserves the right to disqualify from further enrollment or participation in departmental programs:

1. Students whose grades fall below 3.0 in their major;
2. Students who fail to demonstrate reasonable progress and development in their course work in Theatre Arts, particularly by the end of their sophomore year of studies;
3. Students whose conduct reveals a persistent inability to work effectively with others or an unwillingness to adhere to generally recognized standards of professional behavior.

**Preprofessional Curriculum.** The majors in Theatre Arts offered under this curriculum are designed for students who anticipate further study at the graduate level. Programs leading to a Bachelor of Fine Arts are as follows:

THEATRE

1. Courses outside the major:
   a. 30 hours selected from courses offered by departments of the College of Arts and Sciences, which must include English 102, 352, and 353; and History 101, 102;* — 30 hours
   b. Art History 150, plus 3 hours selected from other departments of the College of Fine Arts (art, fine arts, music) or from the School of Architecture and Planning; (majors in acting emphasis must take Music 109). — 6 hours
   c. 12 additional hours selected from courses outside the major offered by any College including Fine Arts. — 12 hours
   — 48 hours
2. Courses in the major: Acting emphasis
   a. Lower Division: T.A. 120-121, 122-123, 220-221, 224-225, 235, 12 hours technical theatre (include T.A. 192, 194, 196, 198), 3 hours Film, and Dance 108 or 210.
   b. Upper Division: T.A. 320-321, 435-436, 420-421, 437. — 80 hours
   Total - Acting emphasis — 128 hours
3. Courses in the major: Technical design emphasis
   a. Lower Division: T.A. 120-121, 122-123, 192, 194, 292-293, 294, 295, 296, plus Film 210.
   b. Upper Division: T.A. 403, 435-436, plus 31 hours of additional theatre courses selected with advisement. — 80 hours
   Total - Technical/Design emphasis 128 hours

DANCE

1. Courses outside the major:
   a. 30 hours selected from courses offered by the departments of the College of Arts and Sciences, which must include English 102, 352, and 353; History 101, 102; 3 hours in anthropology; and — 30 hours
   b. 12 hours selected from other department of the College of Fine Arts (art, fine arts, and music including Music 139-140 or 371-373 by advisement) or from the School of Architecture and Planning; and — 12 hours
   c. 6 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 6 hours
   — 48 hours
2. Courses in the major:
   a. T.A. 120, 122, 192, 196; Dance 108, 149, 212, 222, 250, 262, 263, 311, 422, 431, 6 hours ethnic dance and one three hour course in film. — 51 hours
   b. 25 hours in dance technique (ballet and modern) selected with advisement and taken on a schedule averaging at least seven class sessions per week beginning in the sophomore year — 25 hours
   — 76 hours
3. Additional courses in any field. — 4 hours
   — 128 hours

* Courses in the General Honors Program may be used to satisfy Arts and Sciences requirements except for the specific courses stated above.

**General (Liberal Arts) Curriculum**

This curriculum leads to the degree of Bachelor of Arts in Fine Arts and is a program of broader orientation than the preprofessional curriculum.

THEATRE

1. Courses outside the major:
   a. 39 hours selected from courses offered by the departments of the College of Arts and Sciences which must include American Studies 285; English 102, 352, and 353; History 101, 102;* and — 39 hours
   b. Art History 250, plus 3 hours selected from other departments of the College of Fine Arts (art, fine arts, music) or from the School of Architecture and Planning; and — 6 hours
   c. 15 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 15 hours
   — 60 hours
2. Courses in the major:
   a. Lower Division: T.A. 120, 122, 123, 235, Film 210; 6 hours technical theatre selected from T.A. 192, 194, 196, 198
   Upper Division: T.A. 435, 436, plus Film 328 and Dance 431 — 33 hours
   b. 15 hours of additional theatre courses. Of these at least 6 hours numbered 300 or above — 15 hours
   — 48 hours
3. Additional courses in any field — 20 hours
   — 128 hours

DANCE

1. Courses outside the major:
   a. 39 hours selected from courses offered by departments of the College of Arts and Sciences, which must include English 102, 352, and 353; History 101, 102; 3 hours in Anthropology;* and — 39 hours
   b. 6 hours selected from other departments of the College of Fine Arts (art, fine arts, music) or from the School of Architecture and Planning; and — 6 hours
   c. 15 additional hours selected from courses outside the major offered by any college, including Fine Arts. — 15 hours
   — 60 hours
2. Courses in the major:
   a. T.A. 122, 194, 196; Dance 108, 149, 212 or 311, 222, 250, 262, 263, 368, 431, 466 and 8 hours in dance technique (ballet, modern and ethnic) selected with advisement; and
   b. 4 hours of additional T.A. courses numbered above 300. — 51 hours
3. Additional courses in any field. — 17 hours
   — 128 hours

**Curriculum in Teacher Education**

This program leads to the degree of Bachelor of Arts in Fine Arts with certification to teach in the public schools. In addition to the specific curriculum stated below, you must (a) satisfy the requirements stated by the College of Education for admission to a teacher education program, as well as those stated for admission to student teaching and (b) meet the general (liberal) education requirements set forth by the College of Education. Only with careful planning is it possible to complete a Bachelor of Arts in Fine Arts with certification in educational theatre within a four-year period. For this reason it is essential that you consult the department chairperson as early as possible in the planning of your program.

1. Courses outside the major:
   a. At least 39 hours selected from courses offered by the departments of the College of Arts and Sciences which must include the following: English 102, 352 and 353; History 101 and 102; Psychology 102 and 220; note: 24 hours are needed to complete the requirements of a certifiable teaching minor in a field of Arts and Sciences; and — 39 hours
   b. 6 hours selected from other departments of the College of Fine Arts ( art, fine arts, and music); and — 6 hours
   c. 12 hours consisting of Ed. Fdns. 290, 303 and SATE 361 and 438 taught as a block, and Ed. Fdns. 310; and 3 hours in a special methods course in the field of the teaching minor.
   d. 6 hours SATE 461 (student teaching). — 24 hours

   69 hours
2. Courses in the major: T.A. 120-121, 122-123, 192, 194, 196, 198, 220-221, 403 or 404, 415- 416, 435-436; — 47 hours
3. Additional courses in any field — 12 hours

128 hours

# GRADUATE PROGRAMS

GRADUATE WORK leading to the master's degree is offered in the following fields: American studies, anthropology, architecture, art, biology, chemistry, communicative disorders, community and regional planning, comparative literature, economics, education (administration, art, elementary, foundations, guidance and counseling, health, music, physical, recreation, secondary and adult teacher, special), engineering (chemical, civil, computer science, electrical and computer, mechanical, nuclear), English, French, German studies, geography, geology, history, Latin-American studies, language sciences, management, mathematics, medical sciences, music, nursing, philosophy, physics, political science, Portuguese, psychology, public administration, sociology, Spanish, speech communication, theatre arts.

Also, the Master of Fine Arts degree is offered.

The Doctor of Philosophy is offered in the following fields: American studies, anthropology, art history, biology, business and administrative sciences, chemistry, computer science, economics, education, engineering, English, geology, history, Ibero-American studies, mathematics, medical sciences, philosophy, physics, political science, psychology, romance languages, and sociology.

In education, the degree of Doctor of Education is also offered.

Applicants should contact the graduate unit concerned for information on these particular programs.

## Admission, Fellowships, Traineeships, and Assistantships

Graduates of any accredited college or university may apply for admission to graduate study. Communications regarding admissions should be addressed to the Office of Graduate Studies or to the graduate unit concerned.

A formal application is required of all students, including graduates of The University of New Mexico. Application forms may be obtained by writing to the Office of Graduate Studies. The Graduate Bulletin may be obtained at a cost of $2.00 (plus $1.00 postage and handling if mailed) from the UNM Bookstore, remittance to accompany order. Applicants from institutions other than UNM must have two transcripts of all undergraduate and graduate work sent **directly to the Graduate Office** from **each** institution previously attended. Even though a master transcript may carry records from other institutions, University regulations require that these records be sent from each institution. **Transcripts in the possession of students will not be accepted for entrance purposes.**

In order to be assured of consideration for admission, students should have all application forms, transcripts, and the $15.00 application fee on file in the Office of Graduate Studies **at least by** the deadlines listed in departmental sections of the Graduate Bulletin. Also, the student should check with the department concerned regarding additional admission requirements.

Although each application is reviewed individually, in general an average of at least B, in the last four semesters and in the intended major field, is required for admission and for consideration for financial aid. No student is assured of admission until she or he has received an official offer of admission from the Dean of Graduate Studies.

Assistantships are available for some well-qualified, degree-seeking graduate students. See departmental sections of the Graduate Bulletin for financial and application deadlines.

## Graduate Credit for Work Taken as an Undergraduate

Graduate credit for work taken as a senior may be granted only if the student:

1. is within ten hours of the baccalaureate degree;
2. is to complete all requirements for that degree during the semester in which the graduate credit is sought;
3. has a grade-point average of at least 3.0 during his or her last four semesters;
4. seeks no more than nine hours of graduate credit during that semester (six during the summer session); courses must be listed in the Graduate Bulletin;
5. Obtains **in advance** the approval of the major graduate unit and the Dean of Graduate Studies.

Although courses numbered above 500 are normally open only to graduate and professional students, exceptional undergraduate students may, with advance approval from the instructor and the Dean of Graduate Studies, take such courses for undergraduate credit.

**Graduate Credit and Extension or Correspondence Courses**

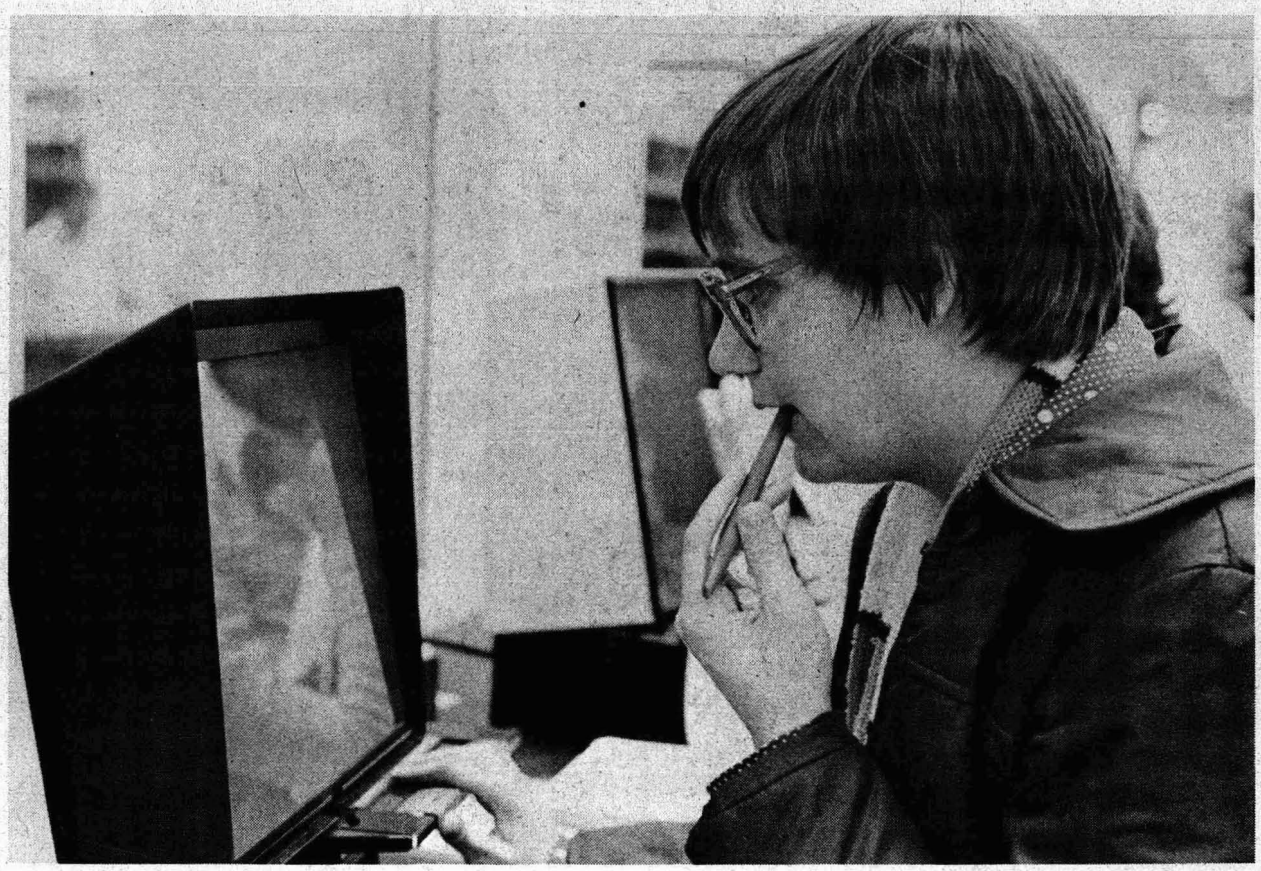
A maximum of six hours of credit may be granted for graduate extension courses taken from The University of New Mexico, but no extension credit may be transferred from other institutions.

The University accepts no correspondence credit towards its advanced degrees.

## Off-Campus Residence Centers

The University offers graduate credit for work taken at The University of New Mexico Centers for Graduate Studies at Los Alamos and Santa Fe. For information concerning these centers, see p. 76

**Information.** For further information consult the Graduate Bulletin, the Office of Graduate Studies, or the graduate unit concerned.



# SCHOOL OF LAW

THE STATE BAR of New Mexico having previously adopted a resolution to that end and the Legislature of New Mexico having financial provision, the Regents of The University of New Mexico, on March 31, 1947, as expressly authorized by Laws 1889, Ch. 138, Sec. 15, approved the establishment of a School of Law. The School is fully accredited; it was approved by the American Bar Association on February 24, 1948, and membership in the Association of American Law Schools was granted in December 1948. The School offers a curriculum leading to the degree of Juris Doctor (J.D.). A chapter of the Order of the Coif was established at the School in 1971.

Information concerning the School is found in the School of Law Bulletin which may be obtained by writing to the Dean of the School of Law, The University of New Mexico, 1117 Stanford NE, Albuquerque, New Mexico 87131.

**Admission.** Information about the procedure for applying to the Law School is contained in the School of Law Bulletin. All applicants for admission to the School of Law are required to take the Law School Admission Test (LSAT), to provide transcripts through the Law School Data Assembly Service (LSDAS), and to have a baccalaureate degree from an accredited college or university before registration. Application material is available after September 1; application deadline is January 15.

Beginning law students will be admitted at the opening of the fall semester only.

**Student Aids.** See the School of Law Bulletin for scholarships, awards, and loans available to law students.

**Admission Expenses.** All students registered in the School of Law become members of The University of New Mexico Student Bar Association and are expected to pay, in addition to the University's tuition and fees for residents or for nonresidents, membership dues for the Association. The current dues are $10.00 per year, payable to the School of Law at registration. Also payable at the beginning of each semester is a $12.00 material fee.

# THE ROBERT O. ANDERSON SCHOOLS OF MANAGEMENT

The Anderson School has as its major objective the preparation of professional managers for the private, public, and not-for-profit sectors. Career preparation is emphasized in the following areas:

Accounting
Business computer systems
Economics, environment, and policy*
Financial management
General management
Health systems management*
Human resources management
International management
Management information systems*
Management science
Marketing management
Public and not-for-profit management*

## Degrees Offered

The Robert O. Anderson School of Management offers the degree of Bachelor of Business Administration. The Robert O. Anderson Graduate School of Management offers two degrees: The Master of Business Administration and the Master of Management; a Ph.D. in management is offered cooperatively through the UNM Graduate Studies Program.

**Bachelor of Business Administration**

The B.B.A. degree requires satisfactory completion of a four-year (129 hours) course of studies which features an upper division (junior and senior years) professional curriculum. Specific admission and graduation requirements are discussed in later sections.

Before admission to the upper division professional curriculum, the student takes course work in a number of foundation subject areas outside the field of management while enrolled in the University College or some other college.

The course work in the upper division consists of two groups. The first group is required of all students in the Anderson School and comprises the core of the subject matter in management. The second group consists of concentration and elective courses of the student's own choosing.

The program provides the opportunity for concentrations in accounting, business computer systems, financial management, general management, human resources management, international management, management science, and marketing management.

**Master of Business Administration**

The School offers two programs leading to the M.B.A. degree. One program is for persons who have earned a bachelor's degree. For information concerning this program, consult the **Bulletin of the Robert O. Anderson Graduate School of Management.** Applications should be made to the Anderson Graduate School of Management M.B.A. Program Office.

A second program leading to the M.B.A. degree is offered by the Anderson School jointly with cooperating departments in the University. It is a special "three-two" program which permits a student to complete a bachelor's degree in a field outside of business and an M.B.A. degree in five years. The curriculum is designed so that the first three years are devoted to general University studies and the undergraduate major, and the final two years are used to complete the requirements of the graduate program at the Anderson Graduate School. This program is described in a later section as the "Three-Two" Program.

**Master of Management**

The M.Mgt. degree is awarded to candidates who successfully complete the Management Master's Program. This two-year program is restricted to managers from public and private organizations who have gained at least three years of managerial experience and who retain full job responsibilities while enrolled. Additional information is available in the **Master of Management Program Brochure** and from the office of the Director of the Management Development Center.

**Scholastic Regulations**

The student should become familiar with the general academic regulations which apply to all students enrolled in the University.

Special attention is called to the rules on probation and suspension.

It is a firm policy of the School that course prerequisites must be observed. Management courses taken out of sequence cannot be used to fulfill the degree requirements of the School regardless of the grades earned in such courses.

*Career preparation in economics, environment and policy, health systems management, and management information systems, and public and not-for-profit management is offered only at the graduate level.

## Bachelor of Business Administration Degree Program

Students who have completed two years of general education and have satisfied specific requirements for entrance may be admitted to the upper division B.B.A. program at the Anderson School. Wide-ranging early studies give the student breadth and necessary perspective on the world in which he or she will function as a manager.

The program is designed to give broad experience in the liberal arts and applied sciences as preparation for productive living and progress toward executive responsibilities. The program of studies designed to achieve these objectives has three main divisions. The first division includes courses in a number of areas of knowledge outside the field of management and comprises 40 percent or more of the entire four-year program, the second division is a group of professional management courses required of all students in the School, and the third division comprises a group of courses in a concentration area of the student's own choosing.

**Admission**

*The admission requirements stated below are minimum requirements. Since the number of applications may exceed the number of students that can be admitted, the School cannot guarantee admission to all applicants meeting these minimum requirements. If additional selection is necessary, it will be based on prior academic performance with particular attention given to the courses listed under "Specific Requirements."*

*First preference for enrollment in all of the upper division management courses will be given to students who have been admitted to the Anderson School. Other students will be accepted on a space-available basis, provided they satisfy prerequisites.*

**Admission from the University College.** All freshman students are admitted to the University College. The minimum requirements for transfer from the University College to the Anderson School are:

1. Sixty-two hours of earned credit.
2. A scholarship index of at least 2.0 on the last 62 hours attempted.
3. A grade of C or higher in each of the courses listed under "Specific Requirements." *NOTE: Because of space limitations, fulfillment of minimum grade point requirements does not guarantee admission into the Anderson School of Management.*
4. Satisfactory competence in written communications as evidenced by passing the Communications Skills Test (CST) or achieving a score of 25 or higher on the English Portion of the ACT or a score of 552 or higher on the verbal SAT. Foreign students must pass the Michigan Test of English Language Proficiency. Effective Fall 1980 students completing English 102 with a grade of C or better are exempt from the CST. Effective communications (both oral and written) are essential for satisfactory performance in the the upper division courses of the Anderson School. Therefore, students who have difficulties in these areas are advised to take appropriate courses in English and speech communication as a part of their first two years' work.
5. Completion of the following course requirements:
   a. General education electives:
      (1) Humanities (English, including literature; Speech Communications 130L or 132; modern languages; philosophy; fine arts) — 9 hours
      (2) Social sciences (anthropology, geography, history, political science) — 9 hours
      (3) Laboratory science (biology, chemistry, geology, physics) — 4 hours
   b. Specific requirements: These courses are prequisites for all 300- and 400-level courses in the Anderson School. These prerequisites cannot be taken on a credit/no credit basis.
      (1) Math 121 and 180 (or the equivalent) — 6 hours
      (2) Econ 200, 201 — 6 hours
      (3) Behavioral Sciences—either Psych 102 and a 200-level or higher psychology course or Soc 101 and a 200-level or higher sociology course — 6 hours
      (4) Statistics—MGT 290 and 291 — 4 hours
      (5) Computer Science—CS 150 (or the equivalent) — 3 hours
      (6) Introduction to Accounting-MGT 202‡ — 3 hours
   c. Electives (excluding activity physical education courses, management courses for non-majors, and University Skills courses. — 12 hours

   62 hours

**Suggested First Two Years of B.B.A. Program**

FIRST YEAR

First Semester

| | |
|---|---|
| Math 121 College Algebra | 3 |
| Laboratory science | 4 |
| Humanities elective | 3 |
| Social science elective | 3 |
| Elective | 3 |
| | 16 |

Second Semester

| | |
|---|---|
| Math 180 Calculus | 3 |
| Econ 200 Principles & Problems | 3 |
| Soc 101 or Psych 102 | 3 |
| Humanities elective | 3 |
| Elective | 3 |
| | 15 |

**SECOND YEAR**

First Semester

| | |
|---|---|
| CS 150 Computing for Bus Stu | 3 |
| Econ 201 Principles | 3 |
| Soc or Psych (200-level or above) | 3 |
| Humanities elective | 3 |
| Elective | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| MGT 290 Statistical Methodology | 3 |
| MGT 291 Business Stat Lab | 1 |
| MGT 202 Intro to Acct | 3 |
| Social science elective | 6 |
| Electives | 3 |
| | 16 |

**Junior and Senior Years**

Suggested programs for the junior and senior years for each concentration are available from the BBA Program Office at the Anderson School.

‡ It is recommended that Mgt 202 be taken in the second semester of the sophomore year. Students desiring an accounting concentration **must** earn at least a C in Mgt 202 and may schedule this course for the first semester of the sophomore year. Those aspiring toward an accounting concentration should consult with a member of the accounting faculty during their first semester at the University. Mgt 340 may be taken by those concentrating in accounting in the second semester of the sophomore year.

**Application for Admission**

Application for admission to the Anderson School should be made during the semester that the student expects to complete the requirements set forth above. Normally, this will be in the second semester of the sophomore year. Such students should notify the School of their intent to transfer and present a transcript of their college work **not later that the eighth week** of the semester in which they will complete the requirements for admission.

**Transfer from Other Accredited Institutions**

Undergraduate programs in management or business administration in universities normally concentrate the professional courses in the last two years of a four-year program. Only a limited amount of work in business courses is offered prior to the junior year. The objective of this policy is to permit the student ot acquire a foundation of work in the basic arts and sciences as a prerequisite for professional courses in management.

All programs accredited by the American Assembly of Collegiate Schools of Business require the students to take a substantial portion of the four years' work in the arts and sciences, including work in mathematics, social sciences, humanities, and the natural sciences. Students desiring a four-year degree are advised to take a majority of their work during the first two years in the arts and sciences, including courses that will give them a strong background in mathematics.

Students planning to complete their first two years of study at a junior college or at a four-year college other than UNM should take only those courses that are offered as freshman- or sophomore-level courses at the University of New Mexico.

Transferring students must meet normal requirements for admission to this University as well as admission requirements of the Anderson School. Students desiring transfer credit for upper-division courses must obtain approval of the School's faculty.

General policies for obtaining transfer credit are as follows. Students transferring from accredtied four-year institutions granting baccalaureate degrees will follow the existing UNM policy for admitting and granting transfer credit. Students desiring to transfer credit for any upper-division Anderson School course must recieve prior approval from a faculty member possessing expertise in the area. Forms for such approval are available at the B.B.A. Program Office at the Anderson School.

Generally, students transferring from accredited junior, community or branch colleges should note that no transfer credit will be given for courses which are offered at the upper-division level at UNM. Lower-division credit will be determined in the following manner. First, courses acceptable for transfer must be contained in the Statement of Advanced Standing provided by the Registrar. Second, students being admitted to the Anderson School must meet the same entrance requirements specified for UNM students seeking admission, and, in addition, must maintain at least a 2.0 GPA on the first 12 hours of Anderson School and economics courses undertaken. Failing to do so will cause the student to be placed on probation, during which he/she must earn a GPA sufficiently high to raise his/her GPA in management and economics courses to a minimum of a 2.0 upon completing 24 hours of such coursework.

*A student on probation who does not show such improvement in his/her management and economics GPA is subject to suspension by the Anderson School.*

Students transferring from a non-accredited junior or community college should note that the same policy as indicated above for transfers from accredited junior or community colleges applies to them, except that they will automatically be placed on probation upon entry and must maintain a 2.0 GPA on the first 12 hours of management and economics course work undertaken. Failing to do so will make the student subject to suspension by the Anderson School.

The Anderson School will not accept credit from educational programs of non-collegiate organizations.

Each area will determine how many hours must be taken in residence at UNM in concentration area courses in order to obtain a concentration in the area. All other current admission and transfer credit policies now being used by the Anderson School will continue to apply except as modified in this catalog.

**Advisement**

Students desiring to enter the Anderson School should obtain advisement from the BBA Program Office at the Anderson School.

**Graduation Requirements**

To graduate with the degree of Bachelor of Business Administration, the student must meet the following requirements:

1. Completion of all preadmission requirements.
2. Completion of a minimum of 129 hours (excluding PE) with a scholastic index of at least 2.0 on all semester hours attempted at the University of New Mexico.
3. Completion of a minimum of 53 hours in management courses and economics (including management and economics courses required for admission) with a scholarship index of at least 2.0 on all hours attempted.
4. Transfer students from other Universities must take a minimum of 25 hours in economics and management courses while enrolled at the Anderson School.
5. Course requirements:

| | | |
|---|---|---|
| a. | Preadmission Requirements | 62 hours |
| b. | Anderson School Core Courses: | |
| | MGT 300 Operations Research/ Management Science | 3 hours |
| | MGT 301 Computer-Based Information Systems | 3 hours |
| | MGT 303 Accounting for Management Control | 3 hours |
| | MGT 306 Organizational Behavior I | 3 hours |
| | MGT 307 Organizational Behavior II | 3 hours |
| | MGT 308 Organizational Environment | 3 hours |
| | MGT 309 Man, Society and Law or MGT 310 Law of Contracts (NOTE: Students concentrating in accounting, marketing management, and/or international management must take MGT 310.) | 3 hours |
| | MGT 322 Marketing Management | 3 hours |
| | MGT 326 Financial Management | 3 hours |
| | MGT 398 Management Career Planning | 1 hour |
| | MGT 498 Senior Seminar | 3 hours |
| | Econ 300 Micro-Economic theory | 3 hours |
| | Econ 315 Money and Banking | 3 hours |
| | Total Anderson School Core | 37 hours§§ |
| §§ | c. Electives | |
| | Upper division humanities | 3 hours• |
| | Upper division social sciences or behavioral sciences. | 3 hours• |
| | Management and other—at least 12 hours must be in management courses. | 24 hours |
| | Total Electives | 30 hours |
| | Total Degree Requirements | 129 hours |

**General Studies.** Students who accept an invitation to join The University of New Mexico General Studies program may apply their various seminars to satisfying appropriate general education requirements or electives when approved **in advance** by the Dean of the Faculty at the Anderson School.

**ACT and CLEP Credit.** The Anderson School of Management will accept 12 hours of ACT or general CLEP credit toward humanities, social sciences, and free electives. A maximum of 12 hours of subject CLEP credit will be accepted in the courses listed under "CLEP Subject Examination" on p. 12

**Air Force and Naval ROTC.** Students enrolled in the Air Force or Naval ROTC may need an extra semester beyond four years to complete the requirements for the degree of Bachelor of Business Administration and their commission. It is possible, however, for students to complete these requirements in four years by using their required Naval and Air Force courses as their "other electives" (See Graduation Requirements, part 5C). It is important that such students make sure that they are taking the courses required for the degree.

§§ The upper division core requirements are subject to change. Students are responsible for meeting core requirements in effect at the time of their admission to the school.

• Accounting concentrations may substitute accounting electives for these two requirements. It is highly recommended that students concentrating in marketing management or international management meet these two requirements by selecting electives from the interdisciplinary listing of courses under each of these respective concentrations.

## Application for Degree

During the first semester of the senior year, students must file an application for the B.B.A. degree with the BBA Program Office at the Anderson School of Management. A graduation summary sheet will then be prepared and a copy supplied to the student. No student will be included on a list of candidates for graduation unless an application for degree has been approved.

## Concentrations.

Candidates for the B.B.A. degree should declare a concentration not later than the first semester of their senior year. The specific concentrations are those listed below:

**Accounting.**

Advisers: Mr. Caplan, Mr. Christman, Mr. Clancy, Mr. Collins, Ms. Elliott, Mr. Koogler, Mr. Mori, Mr Yeakel.

In addition to the core courses required of all B.B.A. candidates (which for accounting majors must include MGT 310), the accounting concentration consists of these courses: MGT 340, 341, 342, 346, 440, 443, 449 21 hours

MGT 343, 348, 444, and 445 are strongly recommended as electives. Transfer studetns selecting the Accounting concentration must complete a minimum of 12 hours of upper-division accounting courses, including 341, while in residence at the Anderson School. Students interested in careers in professional accounting are urged to consider additional study leading to the M.B.A. degree.

**Business Computer Systems.**

Advisers: Mr. Bullers, Mr. Lievano, Mr. Rajaraman.

The course requirements are:

a. MGT 435 and 460; CS 237 and 337.
b. Three courses (9 hours) in management science, computer science, mathematics, or related subject areas approved by the advisers. 21 hours

Students should seek an adviser to assist in planning their program as early as possible, preferably in their fourth semester.

**Financial Management.**

Advisers: Mr. Cheng, Mr. Panton.

In addition to MGT 326, required courses are:

a. MGT 470, 471, and 472.
b. Three of the following: MGT 340, 341, 473, 474, 496 Econ 303, 350, 415, 424, 500. 18 hours

**General Management.**

Advisers: Mr. Parkman, Mr. Porter, Mr. Radosevich, Mr Ryberg, Mr. Slate.

Required courses are:

One management course beyond the core in each of four o the concentration areas (including small busines management). 12 hour

**Human Resource Management.**

Advisers: Mr Champoux, Mr. Finston, Mr. Jehenson, Mr Rehder.

In addition to MGT 306 and 307, the required courses are MGT 463, 464, 465, and 466. 12 hour

**International Management.**

Advisers: Mr. Lenberg, Mr. Robles, Mr. Winter.

Students interested in professional careers in internation management are urged to prepare to enter the M.B.A program to pursue a graduate degree or other related com bined graduate degree options offered by the Anderso School with other departments of the University (such a the dual M.B.A./M.A. in Latin American Studies degree emphasizing International Management.) Course requirements for the B.B.A. concentration are:

a. MGT 328, 480 and 483, plus MGT 474 or one of th following: MGT 585, 586, 587, 588, 589.* (MGT 310 required as fulfillment of the core requirements for Inte national Management majors.)
b. Minimum of 6 credit hours in one of the followir options:

**Latin American Emphasis Option.**

Econ 420, 421, 423, Geog 301, 302, Anth 314, Hist 282, 383, 384, 481, 483, Pol Sc 355 or 356, 445, 455, Soc 350, 450, Spanish 201 or 211 or Portuguese 275; or other related courses with adviser's prior approval.

**European Emphasis Option.**

Econ 424, 450, 455, Geog 332, 333, 381, Hist 303, 345, 349, 438, 443, Pol Sc 221, 357, French 201 or 276 or German 201 or Russian 201; or other related courses with adviser's prior approval.

c. It is highly recommended that the in 3 student's 6 credit hours of electives in upper-division humanities and social sciences and/or behavioral sciences also be selected from (b) above. 18 hours

**Management Science.**

Advisers: Mr. Anderson, Mr. Lievano, Mr. Peters, Mr. Rajaraman, Mr. Reid.

Required courses are:

a. MGT 436 and 439, Math 347, CS 452 (AOA MGT 532)
b. Three courses (9 hours) in additional in 3 mathematics, computer science, or Anderson School of Management courses as approved by adviser.

**Marketing Management.**

Advisers: Mr. Lenberg, Mr. Patzer, Mr. Robles, Mr. Rogers, Mr. Winter.

The course requirements are:

a. At least five courses from: MGT 328, 480, 482, 483, 484, 486, and 487. (Seniors with 3.0 or higher GPA may also take 3 credit hours selected from MGT 581, 582, 585, 587, 589* in place of 3 credit hours under (b) below. MGT 310 must have been taken as part of the core requirements.)
b. It is recommended that at least 3 credit hours be earned from among the following: Econ 330, 332, 424, 440, Engl. 320, Journ 401, 402, Math 346, 447, 448, MGT 495, Psych 413, Soc 335, Speech Com 232, 327, 368, 421, 444, 449, or other courses with adviser's consent.
c. It is also highly recommended that the student's 6 credit hours of electives in upper-division humanities and upper-division social sciences and/or behavioral sciences (as well as other electives) also be selected from the courses listed under (b) above. 15 hours(minimum)

Qualified students interested in careers in marketing management are urged to consider entering the M.B.A. program for additional study.

## The "Three-Two" Program for the Master of Business Administration Degree†

Completion of the "Three-Two" Program is accomplished in the following manner:

1. For the first three years of University studies, the student pursues a normal program of undergraduate work in either (a) the College of Arts and Sciences‡, (b) one of the other colleges in the University, or (c) the Bachelor of University Studies program.
2. During the third year of academic work, the student applies for admission to the M.B.A. program of the Anderson Graduate School. The student is expected to meet the following requirements by the end of the fourth year:
   a. Complete the bachelor's degree requirements with an overall grade-point average of 3.0.
   b. Maintain a B average in management courses.
   c. Take the Graduate Management Admission Test (GMAT) prior to admission.
   d. Be accepted for admission to the Robert O. Anderson Graduate School of Management.
3. In the fourth year of academic work, the student begins the first year of the M.B.A. program and also completes the requirements for a bachelor's degree in the undergraduate field. Each student should consult with the M.B.A. Program Office for a transcript evaluation. Cooperating departments thoughout the University will accept the courses in management taken during this year as constituting a minor for the purposes of the bachelor's degree. Normally 18 hours of graduate management courses will constitute a minor. However, each student should verify this with the cooperating department.
4. Prior to being awarded the bachelor's degree the student applies for admission to the Robert O. Anderson Graduate School of Management.
5. In the fifth year of study, the student completes the second-year requirements and electives of the M.B.A. program.
6. In order to satisfy the requirements for the M.B.A. degree, the student must earn a minimum of 33 hours credit beyond the bachelor's degree, 32 hours of which must be completed while the student is enrolled in The University of New Mexico Graduate Program. At the beginning of each semester in which the student is enrolled as an undergraduate in the M.B.A. courses, he or she must apply for graduate credit. Contact the M.B.A. Program Office for information.

**Admission**

As indicated above, students electing the "Three-Two' Program must apply for admission to the M.B.A. program during the third year of their undergraduate studies. Application should be made to the M.B.A. Program Office of the Anderson Graduate School in the semester preceding the beginning of the fourth year. *No undergraduate student will be permitted to enroll in any 500-level course offered by the School unless he or she has been officially admitted for study except when approved by the M.B.A. Program Office. Such approval will be given only in special cases.*

Requirements for admission are:

1. Completion, by the end of the semester in which application is made, of at least 90 hours of course work toward the bachelor's degree. No fewer than 30 of these hours must have been taken at The University of New Mexico.
2. A minimum grade-point average of 3.0 on all work taken at The University of New Mexico.
3. Demonstration of sufficient breadth in the undergraduate program (see "Breadth Requirements' following).
4. Completion, with a grade of C or better, of the following courses in mathematics and economics (or their equivalents): Math 162 and 163 or 180 and 181; Econ 201, 300, and 303. (Note: These requirements can be met after admission to the School—see below.)
5. A satisfactory score on the Graduate Management Admission Test must be submitted to the School. This examination is administered four times annually by the Educational Testing Service. Detailed information about the test and application forms may be acquired from the UNM Testing Center or by writing directly to Educational Testing Service, Box 966, Princeton, New Jersey 08540. Since an application cannot be considered without the results of this test, students are urged to make arrangements to take it early in the semester preceding admission to the program.

**Transfer from Other Accredited Institutions**

Transfers must meet normal requirements for admission to this University and must have completed 30 credit hours of course work at The University of New Mexico before being admitted to the first year of the M.B.A. program (fourth year of the "Three-Two" Program).

**BREADTH REQUIREMENTS**

It is the objective of the Robert O. Anderson Graduate School of Management to offer graduate, professional education within an intellectual framework provided by a broad liberal arts preprofessional program. As a general guideline, minimum breadth requirements for entry into the fourth year of the program are:

**Humanities**

English, including literature; modern languages, philosophy, speech communication 15 hours

**Social Sciences**

a. Geography, history, political science
b. Behavioral sciences: psychology or sociology, anthropology
c. Economics** 24 hours

**Laboratory Sciences**

Biology, chemistry, geology, physics 8 hours

**Mathematics**

It is recommended that Math 180 and 181 or 162 and 163 be taken 6-8 hours

It is recommended that students fulfill the breadth requirements listed prior to being admitted to the first year of the M.B.A. program. Many alternative combinations of course work in the arts and sciences or in other colleges of the University can provide acceptable preparation for study in the Anderson School. For this reason, few specific course requirements have been established as prerequisites for admission. Each application will be considered individually with respect to the breadth requirement. In instances in which a student's prior academic record appears lacking in breadth, the student will be advised as to the additional course requirements necessary to correct the deficiencies. Such additional work will, in most cases, extend the time required to complete the "Three-Two" Program by at least one semester. A student who has not taken Math 180 and 181 or 162 and 163 and Econ 201, 300, and 303 or 315 may still be admitted. He or she will, however, be required to take one or two additional courses offered by the School during the fourth year. These additional courses may increase the length of the program by a semester or summer session. In order to reduce the possibility of a lengthened program, students who are considering the "Three-Two" Program are encouraged to consult with an adviser in the Anderson Graduate School of Management at the earliest possible date in their academic career. Certain graduate courses can be waived on the basis of undergraduate work with a B or above and the permission of the course instructor. Cooperative planning by the student, the adviser in the major field, and an adviser from the Anderson School should permit the development of an undergraduate program which meets the needs and interests of the student while, at the same time, providing the background required for admission to the M.B.A. program.

**M.B.A. Program**

First-Year Core Courses
(taken during the fourth year of the "Three-Two" Program)

| | |
|---|---|
| MGT 500 Quantitative Analysis I | 2 |
| MGT 501 Statistical Analysis for Management Decisions | 3 |
| MGT 502 Accounting and Management Information Systems I | 3 |
| MGT 504 Organizational Economics I | 3 |
| MGT 506 Organizational Behavior I | 3 |
| MGT 507 Organizational Behavior II | 3 |
| MGT 509 Organizational Environment II-Law | 2 |
| MGT 510 Introduction to Information Processing | 2 |
| MGT 520 Operations Research and Production Management | 3 |
| MGT 522 Marketing Management | 3 |
| MGT 526 Financial Management | 3 |
| | 30 |

Second-Year Core Courses
(taken during the fifth year of the "Three-Two" Program)

| | |
|---|---|
| MGT 398 Management Career Planning | 0 |
| MGT 503 Accounting and Management Information Systems II | 3 |
| MGT 505 Organizational Economics II | 3 |
| MGT 508 Organizational Environment I | 3 |
| MGT 528 International Management | 3 |
| MGT 598 Seminar in General Management | 3 |
| Electives* | 15 |
| | 30 |

*Students wishing to take a 500-level course must petition the Anderson Graduate School for undergraduate credit. They must have a 3.0 overall GPA and be within 10 hours of graduation.

† Students who have earned a bachelor's degree prior to entering the M.B.A. program should refer to the **Bulletin of The Robert O. Anderson Graduate School of Management for details concerning admission, curriculum, and degree requirements. Copies of this bulletin may be obtained from the M.B.A. Program office, Robert O. Anderson Graduate School of Management, The University of New Mexico, Albuquerque, New Mexico, 87131.**

‡ Information regarding specific courses of study is available from the M.B.A. Program office.

**It is recommended that Econ 201, 300, and 303 or 315 be taken.

**NOTE:** Reasonable adjustments in the above sequencing of courses can be made in order to provide for individual concentration needs.

The fifth-year course of studies is the normal *second year* of the M.B.A. curriculum. A moderate capability for specialization in the areas of accounting; economics, environment, and policy; financial management; general management; health systems management, human resources management; international management; management information systems; management science; marketing management; and *public and not-for-profit* management is provided. See the Bulletin of the Robert O. Anderson Graduate School of Management for details. Detailed information on course sequencing for the "Three-Two" Program and statements setting forth specific course requirements and specialization options in the M.B.A. portion of the "Three-Two" Program may be obtained from the M.B.A. Program Office at *the Anderson* Graduate School.

* Three hours must be taken in one of the basic areas included in the first-year core. Otherwise, courses may be taken in management or in other subject areas appropriate to the candidate's career objectives.

# SCHOOL OF MEDICINE

THE ESTABLISHMENT of a School of the Basic Medical Sciences was authorized by the Regents and the faculty of The University of New Mexico in 1961. The first entering class was enrolled in September 1964 and progress to the full four-year program was approved by the New Mexico State Legislature in 1966. Full accreditation by the American Medical Association and the Association of American Medical Colleges was granted in 1968.

Additional information concerning the School is found in the School of Medicine Bulletin, which may be purchased for $1.50 from the University of New Mexico Bookstore, Albuquerque, New Mexico 87131.

## The MD Degree

The following courses are minimum requirements for all candidates for admission to the Medical School:

General chemistry, including laboratory, one year
Organic chemistry, including laboratory, one year
General biology, including laboratory, one year
General physics, one year
College mathematics, one year. Mathematics through calculus is strongly recommended.

The courses taken to fulfill the specific requirements listed above should be those required of students majoring in the respective fields. Students who major in the humanities or social sciences are given equal consideration with those who major in the sciences.

All applicants are required to take the New Medical College Admission Test. The test is administered by the Testing Center, main campus, and applications may be obtained from that office.

A final selection of applicants is made on the basis of the scholastic record, scores on the Medical College Admission Test, recommendations from undergraduate professors, and impressions gained from personal interviews at the Medical School.

Preference for admission is given to qualified applicants who are residents of New Mexico or regional states which do not have their own medical schools and which participate in the Western Interstate Commission for Higher Education Student Exchange Program.

The School of Medicine participates in the American Medical College Application Service (AMCAS); the Early Decision Program; and the Minority Applicant Registry (MED-MAR), operated by the Association of American Medical Colleges.

Application materials may be obtained by writing to the American Medical College Application Service, 1776 Massachusetts Avenue, NW, Washington, DC 20036. It is recommended that applications be filed not later than November 1 of the year preceding anticipated enrollment. Applications will not be accepted after December 1.

## Associate or Arts in Human Services

An Associate of Arts in Human Services is offered by the Department of Psychiatry through the School of Medicine. This two-year program prepares paraprofessionals to function in community agencies in a variety of new careers such as community mental health workers, client interviewers, substance abuse workers, and client service agents.

The curriculum includes a variety of academic subjects which will enhance the student's ability to understand and relate to psycho-socio community dynamics of their clients/patients and to help them become competent central staff members of the health and mental health service teams.

The degree is available to persons enrolled in the UNM School of Medicine's Human Services Worker Program.

For information concerning eligibility in this program, contact The University of New Mexico School of Medicine's Human Services Worker Program, 620 Camino de Salud NE, Albuquerque, NM 87131, or call 277-5428.

**Admissions**

Applicants must complete Human Services Worker Program application forms as well as the regular UNM application.

Those applicants who are selected must:

1. Be over 18 years of age
2. Be interviewed by a staff member of the HSW Program

**Curriculum**

FIRST YEAR

*First Semester*

| | |
|---|---|
| HSW 101 Intro to Hum Serv | 3 |
| Eng 101 Wrtg/Rdgs in Expos | 3 |
| HSW 102 Prin of Interviewing | 3 |
| Psy 102 General Psychology II | 3 |
| Soc 101 Intro to Soc | 3 |
| | 15 |

*Second Semester*

| | |
|---|---|
| HSW 105 Group Dynamics | 4 |
| HSW 109 Tech of Assessment & Interv | 3 |
| Eng 102 Analytical Wrtg | 3 |
| Anthro 105 Natural History of Man or Anthro 130 Cultures of the World | 3 |
| HSW 150 Clin Exper in HS | 4 |
| | 17 |

SECOND YEAR

*First Semester*

| | |
|---|---|
| HSW 201 Family Process | 3 |
| Ed Found 303 Hum Growth & Dev. | 3 |
| H Ed 171 Personal & Comm. Health | 3 |
| HSW 250 Adv Clinical Exper in HS | 4 |
| Elective | 3 |
| | 16 |

*Second Semester*

| | |
|---|---|
| HSW 202 Comm Mental Health | 3 |
| Humanities or Fine Arts requirement | 3 |
| Elective | 6 |
| HSW 251 Adv Clinical Exper in HS | 4 |
| | 16 |

**Degree Requirements**

1. Enrollment in UNM School of Medicine Human Services Worker Program
2. A UNM scholarship index of 2.0
3. A minimum of 64 hours of earned credit including:
   a. HSW 101, 102, 105, 109, 150, 201, 202, 250 and 251 - 31 hours
   b. H Ed 171 - 3 hours
   c. Ed Fdn 303 - 3 hours
   d. Eng 101 and 102 (communication) - 6 hours
   e. Psy 102 (behavioral science) - 3 hours
   f. Soc 101 (social science) - 3 hours
   g. Anthro 105 or 130 (behavioral science) - 3 hours
   h. One course from Hist 110, 161, 162, 360, Phil 110 (humanities), Arch 101, 181, 281, Art Hist 101, 130, TA 122, Music 139, 140, Film 210, Dance 115 (fine arts) - 3 hours
   i. Electives: a minimum of 9 credit hours may be chosen from HSW courses (HSW 149, 204, 210 & 211) or from the general catalog, not to include more than 3 hours of PE and/or applied fine arts.

## Medical Laboratory Sciences

**Medical Technology Program**

Medical technologists are the professional laboratorians whose broad background of college science and clinical laboratory training provide the components necessary for their professional responsibilities. They perform the increasingly complex laboratory procedures that are essential in the diagnosis and treatment of disease. The medical technologist may find challenging opportunities in hospital and independent laboratories, physicians' offices, clinics, research, industry, and educational institutions.

The University of New Mexico offers a four-year curriculum leading to a Bachelor of Science in Medical Technology awarded by the School of Medicine. In this program, the student follows a prescribed curriculum which requires five semesters of preprofessional academic study and an 18 month professional training program in medical technology offered by the Medical Laboratory Sciences Division in the Department of Pathology. The Medical Technology Program is accredited by AMA's Committee on Allied Health Education and Accreditation (CAHEA).

This program also meets the requirements for Medical Technology training leading to a B.S. in Medical Technology at the following New Mexico colleges or universities: College of Santa Fe, Eastern New Mexico University, New Mexico Highlands University, New Mexico Institute of Mining & Technology, New Mexico State University, and the University of Albuquerque. Students may also be accepted from other universities which agree to give credit for the training program toward a B.S. in Medical Technology. The parent institution awards the degree upon completion of training.

Students who successfully complete the program are eligible to sit for national certification examinations given by the Board of Registry (ASCP) and/or by the National Certification Agency (NCA).

**Requirements for Admission to the Medical Technology Training Program**

Minimum education requirements are 76 semester hours of acceptable college credits from a college or university approved by a recognized accrediting agency. These credit hours must be aceptable towards a baccalaureate degree and, upon completion of the Medical Technology training program culminate in the awarding of a baccalaureate degree.

Students coming from other universities or colleges who will earn their baccalaureate degree from their parent institutions, students at UNM who elect to earn the BUS degree, or students who already have a baccalaureate degree must have the following prerequisites for admission to the Medical Technology training program at UNM.

Total of 76 semester hours of credit including:

1. Chemistry - a minimum of 16 hours.* This must include one full year of general college chemistry, one course in quantitative analysis, and one course in organic or biochemistry.
2. Biological Sciences - a minimum of 16 semester hours.* This must include courses in microbiology and immunology. Courses must be acceptable toward a major in biological science. Parasitology, genetics, and cell physiology are recommended.
3. Mathematics - a minimum of one course in college level mathematics, preferably algebra or calculus. Remedial mathematics courses will not satisfy the math requirement.

   Other recommended courses are: Physics, Introduction to Computer Sciences, Management, and Biochemistry.

   * All courses must include both lecture and laboratory. Remedial and survey courses are not acceptable.

A minimum grade-point average of 2.0 in all subjects including a grade of C or better in each biology, chemistry, and math course is required.

Students wishing to earn their B.S. in Medical Technology from the School of Medicine at UNM must follow the prescribed curriculum outlined below and should make their intentions known to a medical technology adviser as early in their student career as possible.

Students earning a BSMT degree from an academic institution other than UNM, must meet the degree requirements established by that university in addition to the minimum educational requirements specified above.

***Prescribed Curriculum***

FIRST YEAR
(pre-med tech)
First Semester

| | |
|---|---|
| Chem 121L Gen or 131L | 4 |
| Biol 121L Prin | 4 |
| †Math 150 or 180 | 3 |
| Engl 101 Wrtg/Rdgs in Expos | 3 |
| A&S group requirements elective | 3 |
| | 17 |

Second Semester

| | |
|---|---|
| Chem 122L Gen or 132L | 4 |
| Biol 122L Prin | 4 |
| Engl 102 Analytical Wrtg | 3 |
| A&S group requirement electives | 6 |
| | 17 |

SECOND YEAR
(pre-med tech)
First Semester

| | |
|---|---|
| Chem 301-303L Organic | 4 |
| Physics 151 General | 3 |
| Physics 153L or 157 | 1 |

† Determined by Math Placement Examination.

| | |
|---|---|
| Biol 221 Genetics | 3 |
| A&S group requirement electives | 4 |
| | 15 |

Second Semester

| | |
|---|---|
| Chem 302-304L Organic | 4 |
| Physics 152-154L General | 4 |
| Biol 350L Micro | 5 |
| A&S group requirement electives | 3 |
| | 16 |

THIRD YEAR
First Semester
(pre-Med tech)

| | |
|---|---|
| ‡Chem 253L Quant Analysis | 4 |
| Biol 429 Cell Biology | 4 |
| Biol 456 Immunology | 3 |
| Elective | 3 |
| | 14 |

Second Semester
(Medical Technology Training)

| | |
|---|---|
| Biol 454L Path Bact | 5 |
| Med Lab Sci 400 Orientation | 1 |
| Med Lab Sci 401 Clin Chem | 7 |
| Med Lab Sci 405 Clin Urin | 1 |
| Med Lab Sci 408 Clin Mycology | 1 |
| | 15 |

SUMMER SESSION
(Medical Technology Training)

| | |
|---|---|
| Med Lab Sci 402 Clin Hemat | 7 |

FOURTH YEAR
(Medical Technology Training)
First Semester

| | |
|---|---|
| Med Lab Sci 403 Clin Bacti | 5 |
| Med Lab Sci 404 Clin Immunohemat II | 3 |
| Med Lab Sci 406 Clin Sero | 2 |
| Med Lab Sci 407 Clin Parasit | 1 |
| 1 Clinical Practicum Course* | 5 |
| | 16 |

Second Semester

| | |
|---|---|
| Med Lab Sci 499 Pre-Employment Pract | 2 |
| 3 Clinical Practicum Courses* | 15 |
| | 17 |

* Practicum Courses are selected from the following:

| | |
|---|---|
| I-MLS 451 Prac Clin Chem | 5 |
| II-MLS 452 Prac Clin Hemat | 5 |
| III-MLS 453 Prac Clin Micro | 5 |
| IV-MLS 454 Prac Clin Immunohem | 3 |
| 455 Prac Clin Urin | 1 |
| 456 Prac Clin Immunol | 1 |

Note: Only 4 hours of PE are acceptable toward a degree.

**Medical Technology Training Program**

Medical Technology training at UNM is an 18 month program. Training begins each Spring Semester with students taking pathogenic bacteriology on main campus and Med Tech training courses (Med Lab Sci courses) on the Health Sciences Campus. The program includes the Summer Session. Students complete courses on the Health Sciences Campus in October and are then placed in an affiliate hospital laboratory for further training and study as a medical technologist. Hospital laboratories currently used as clinical affiliates for training students are: Clovis High Plains Hospital, Clovis; St. Vincent Hospital, Santa Fe; St. Mary's Hospital and Eastern New Mexico Medical Center, Roswell; and the following Albuquerque hospitals: Lovelace Medical Center, Presbyterian Hospital Center, St. Joseph Hospital, University of New Mexico Hospital/BCMC, and Veterans Administration Medical Center. A short clinical rotation at the end of the hospital laboratory training allows students an opportunity for an alternate training experience. Additional hospital and clinical laboratories in New Mexico are used for this short clinical rotation or Pre-Employment Practicum Course. These hospitals are too numerous to list and vary from year to year.

Description of courses offered may be found in the Courses of Instruction of this bulletin.

‡ Not required if Chem 131L and 132L are taken.

**Application and Admission**

Categories under which applicants may be admitted to the Medical Technology Program are:

1. Students who have completed 76 semester hours in the prescribed medical technology curriculum at UNM.
2. Students from other New Mexico colleges or universities who meet the minimum educational requirements previously stated and will be eligible for a degree from their parent institution upon completion of the Medical Technology Program.
3. Individuals who possess a baccalaureate or higher degree from an accredited college or university and meet the minimum course work requirements. Those whose academic work was seven or more years prior to making application must update their academic preparation by taking microbiology and biochemistry or equivalent courses acceptable toward a major and earning a grade of C or better.
4. Students enrolled in a curriculum leading to the Bachelor of University Studies degree at UNM and meeting the minimum educational requirements previously stated.

An application must be submitted to the Director of Medical Laboratory Sciences prior to the **September 15** deadline of the year prior to admission. Application may be made while enrolled in courses needed to complete the prerequisites. Official transcripts of all college course work must be sent directly from each institution. Admission is selective and limited to 24 students per year. Selection is based on cumulative GPA, science GPA, letters of reference, and a personal interview. A cumulative GPA of 2.5 is recommended. Selection of applicants will be made by the Medical Laboratory Sciences' Selection Committee. All applicants will be notified of their admission status. Selection will not be denied based on race, creed, color, sex, national origin, age, or handicap.

**Tuition and Expenses**

Tuition and fees for the pre-Med Tech courses and the courses in the M. T. training program are the same as those established for undergraduate students at UNM and listed in the current Schedule of Classes. Refund policies also follow those for the University.

In addition to tuition and fees, the cost of laboratory coats, microscope rental, laboratory manuals, books, and living expenses during the training program must be assumed by the student.

Various types of financial aid are available to University students through the Office of Student Aids. In addition, there are certain scholarships from local and national organizations specifically for students enrolled in the Medical Technology Program. Information regarding these scholarships may be obtained from the Director of Medical Laboratory Sciences.

**Degree Requirements**

A Bachelor of Science in Medical Technology will be awarded by the School of Medicine at UNM to students who:

1. Complete 128 semester hours, including all courses in the prescribed Medical Technology curriculum.
2. Have a cumulative GPA of 2.0 with a grade of C or better in each required science and Med Lab Sci courses.
3. Are recommended for the degree by the faculty.

**Information Requests**

Communications regarding information and applications should be addressed to the Director, Medical Laboratory Sciences, School of Medicine Bldg. #4, The University of New Mexico, Albuquerque, NM 87131.

*NOTE: Changes in the Medical Technology Program could occur. Therefore, you need to follow the prescribed curriculum carefully and stay in touch with the medical technology advisers.*

## Physical Therapy

**The Profession**

Physical Therapy is an allied health profession concerned with optimum functional restoration of patients disabled by illness or injury.

As a physical therapist you will:

a. be a member of a challenging health profession, one in which your knowledge, skills, and interest in people will enable you to make a significant contribution to the well being of others.
b. Function as an integral member of the health team, working closely with the physician, nurse, occupational therapist, counselor, and all others associated with comprehensive health care.
c. utilize your knowledge and judgment in the application of therapeutic properties of exercise, heat, cold, light, sound, electricity, and massage.
d. work with patients whose disabilities result from fractures, nerve injuries, birth defects, brain damage, cardiac problems, and other diseases or injuries of the musculoskeletal, circulatory, respiratory, and neuromuscular systems.
e. evaluate each patient as he is referred to you by the physician and plan a treatment program designed to help the patient achieve his maximum potential.

In choosing physical therapy as a career, you will be limited only by your competency and initiative. You will be able to extend your services beyond the clinical setting into other exciting and challenging areas. These include teaching, planning and coordinating health services, administration, consultation, and research.

**Educational Requirements**

As a high school student, you should:

a. pursue a college preparatory program with emphasis on the physical, biological, and social sciences.
b. contact the physical therapy program of your choice so that you receive the necessary information regarding course requirements and admissions criteria for entrance into that program.

As a college student seeking admission into The University of New Mexico's physical therapy program:

a. you must complete the eqivalent of 74 semester credits in the pre-professional studies (basic sciences and liberal arts) with a grade of C or better in each course. Specific group requirements are described under PRE-PROFESSIONAL CURRICULUM.
b. early in your college career, you should contact the UNM Division of Physical Therapy for advisement regarding specific course requirements and other requirements for admission.

A good academic record is essential, but it does not guarantee acceptance. Applicants must demonstrate familiarity with the practice of physical therapy and the personal qualifications necessary for the professional responsibilities of the therapist.

**Our Program**

The curriculum in Physical Therapy at The University of New Mexico is a five-academic-year course of study leading to a Bachelor of Science degree in Physical Therapy, granted by the School of Medicine. The program is accredited by the American Physical Therapy Association (APTA) and the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association.

**Admissions Procedure**

APPLICATION DEADLINE IS *JANUARY 15* OF EACH YEAR Students are admitted once a year, with classes beginning in the summer. Your application form and accompanying materials must be received by January 15 of the year you wish to enter.

Application is made directly to the Division of Physical Therapy. *Due to limitations in class size, admission is restricted to New Mexico residents and students certified by the Western Interstate Commission for Higher Education (WICHE) Exchange Program.* Only residents of Wyoming, Oregon, Montana, Nevada, Alaska, and Hawaii are eligible for admission to our program under WICHE.

A personal interview by the Physical Therapy Admission Committee is required. The program's student selection process does not discriminate against any student on the basis of sex, age, race, religion, creed, or national origin. If you do wish to apply, please request an application from our department.

**Professional Curriculum**

The professional program is six semesters in length and begins with the summer session each year in June. During the junior and senior years, students take professional courses in the theory and practice of physical therapy and

affiliate at local hospitals for clinical experiences that are correlated with classroom activities.

Following satisfactory completion of the didactic portion of the curriculum, students must successfully prepare and present a written and oral report of a senior project and complete a 15-week period of full-time clinical education before the degree may be conferred. Hospital and health care facilities throughout New Mexico and a limited number outside the state are utilized in the final clinical education program. The costs associated with the clinical affiliations for transportation, room, and board are borne by the student.

You will be required to carry health and liability insurance. Both types are available through the University for a reasonable fee, or you may select your own carriers.

For further information concerning this program, contact us at this address or phone number:

Chairman, Admissions Committee
Division of Physical Therapy
UNM School of Medicine
Albuquerque, NM 87131
(505) 277-5755

**Pre-Professional Curriculum**

The pre-professional curriculum consists of courses in the basic sciences and liberal arts which will provide the student with a well-rounded general education background: **74** semester hours (or equivalent if not on semester system), as described below.

| Sciences | Sem. Hours | Recommended UNM Course Numbers |
|---|---|---|
| Gen Biol | 8 with lab | Biol 121L, 122L |
| Gen Chem | 12 with lab | Chem 121L, 122L, and 212 |
| Gen Physics | 8 with lab | Phys 151, 153L; 152, 154L |
| Math | 6 | Math 102 and any course above intermediate algebra⊗ |
| Microbiol | 4 | Biol 239L |
| Nutrition | 3 | HEC 125 |
| Psychology | 9 | General, developmental, abnormal, or psychology of personality, or others as approved by adviser. |

Credit/No Credit option, CLEP, or ACT credits are **NOT** acceptable for above courses.

**Liberal Arts**

In 4 of the 5 areas listed below, you must present 6 semester hours (CLEP or ACT credits are acceptable). No single course may be applied to more than one group.

1. Communications: English writing, speech communication, linguistics, or journalism.
2. Humanities: Literature, including foreign and comparative; history or philosophy.
3. Social Sciences: Economics, geography, political science, sociology, or anthropology.
4. Foreign Language: As many hours as needed to complete the second year of a foreign language. May be established through testing. Six hours of a computer language will also be accepted to fulfill this area.
5. Fine Arts: Acceptable courses are generally those related to the history or appreciation of art, music, theatre, and dance:
   Art Hi 101, 130, 151, 201, 202, 203
   Music 139, 140, 172, 371, 372
   TA 122, 151
   Film 210, 211, 327, 328
   Dance 262, 263
   or other courses as approved by adviser. Unacceptable for this group are all other courses in studio, design, dance, applied music, music theory, or ear training.

**Professional Curriculum**

SUMMER SESSION (10 weeks)

| JUNIOR YEAR | CREDITS |
|---|---|
| PHY TH 321 Human Anatomy | 6 |
| PHY TH 310 Intro to Physical Therapy | 2 |
| | 8 |

FALL SEMESTER

| | |
|---|---|
| Phy Th 301 Therapeutic Exer I | 3 |
| Phy Th 330 Prof Development | 2 |
| Phy Th 341 Survey of Med Sci I | 2 |
| Phy Th 361 Human Physiology | 4 |
| Phy Th 370 Kinesiology/Funct Anat | 3 |
| Phy Th 371 Clin Educ I & Sem | 1 |
| Elective | 1 |
| | 15-18⊗ |

SPRING SEMESTER

| | |
|---|---|
| Phy Th 302 Therapeutic Exercise II | 3 |
| Phy Th 306 Therapeutic Procedures | 3 |
| Phy Th 322 Neuroanatomy | 3 |
| Phy Th 342 Surv of Med Sci II | 2 |
| Phy Th 352 Eval Proced I | 3 |
| Phy Th 372 Clin Educ II | 1 |
| Elective | |
| | 15-18⊗ |

FALL SEMESTER
SENIOR YEAR

| | |
|---|---|
| Phy Th 401 Therapeutic Exercise III | 4 |
| Phy Th 431 Hlth Care Sys & Delivery | 1 |
| Phy Th 441 Surv of Med Sci III & Sem | 3 |
| PhY Th 451 Eval Proc II | 2 |
| Phy Th 471 Clin Educ III | 3 |
| Phy Th 499 Independent Study | 1-3 |
| | 14-16⊗ |

SPRING SEMESTER

| | |
|---|---|
| Phy Th 402 Therapeutic Exer IV | 3 |
| Phy Th 422 Psych of Disability | 2 |
| Phy Th 442 Surv of Med Sci IV | 2 |
| Phy Th 472 Clin Educ IV | 3 |
| Phy Th 480 Admin & Superv | 2 |
| Phy Th 400 Independent Study (Senior Paper) | 1-3 |
| | 13-15⊗ |

SUMMER SESSION
(15 weeks)

| | |
|---|---|
| Phy Th 475 Clin Educ V | 6 |

† Clep credit will be accepted for 3 hours math, but **not** for statistics.

⊗Student may take an elective approved by adviser to raise total semester credit hours to 18, without an increase in tuition.

## Radiologic Sciences Programs

The following radiologic sciences programs are offered through the UNM School of Medicine under the direction of the Department of Radiology:

1. A two-year program in radiologic technology, leading to an Associate of Science in Radiologic Technology.
2. A one-year program in nuclear medicine technology.

**Associate of Science in Radiologic Technology**

This approved program prepares the Allied Health profession to perform complex radiographic procedures which assists the radiologist in disease investigation and diagnosis. A radiographer performs effectively by:

1. Applying knowledge of the principles of radiation protection for the patient, self, and others.
2. Applying knowledge of anatomy, positioning, and radiographic techniques to accurately demonstrate anatomical structures on a radiograph.
3. Determining exposure factors to achieve optimum radiographic techniques with a minimum of radiation exposure to the patient.
4. Examining radiographs for the purpose of evaluating technique, positioning, and other pertinent technical qualities.
5. Exercising discretion and judgement in the performance of medical imaging procedures.
6. Providing patient care essential to radiologic procedures.
7. Recognizing emergency patient conditions and initiating life-saving first aid.

Five to ten students are admitted each year. The course of study begins the first week in June and ends the last week in May, after twenty-four consecutive months of clinical and didatic experience.

After successful completion of the program, students are eligible to take the national certifying examination given by the American Registry of Radiologic Technologists.

**Entrance Requirements**

1. Meet the University of New Mexico requirements.
2. A minimum of 15 hours of accredited college course work in the following areas: 6 hours in English/Speech, 6 hour in Art/Humanities/Social Sciences, 6-10 hours in Math/ Natural/Behavioral Sciences, (must take Math 121 or higher and Anatomy & physio with Lab).
3. A minimum grade-point average of 2.5 on all course work attempted.
4. Personal interview with the program selection committee.
5. Application, transcripts, and ACT scores must be received by the Radiologic Sciences office before January 31, prior to June entrance.

**Transfer from Other Accredited Programs**

If you seek transfer into the Radiologic Technology Program from another accredited program, you must meet this program's general admission requirements (see above) and The University of New Mexico's admission requirements. The Radiologic Technology Program is approved for a total of 20 students. Transfer students will only be considered if there is a vacancy in the program. In addition, you must present a minimum of 15 semester hours of transferable college credit in the following subject areas: radiographic exposure/technique, professional orientation/ethics, medical terminology, radiation protection, human structure and function, radiographic procedures, radiographic film evaluation, clinical radiologic technology.

The program faculty reserves the right to evaluate prospective transfer students through objective testing in any subject area.

**Fees**

Tuition for the radiologic technology program is listed in the bulletin under "Student Expenses". In addition to tuition, required books and uniforms will cost approximately $400.

**Informational Requests**

Communications regarding information and applications should be addressed to the Director of Radiologic Technology, The University of New Mexico Allied Health Sciences Center, Albuquerque, New Mexico, 87131.

**RADIOLOGIC TECHNOLOGY CURRICULUM***

FIRST YEAR
Summer Session

| | |
|---|---|
| RS 105 Intro to Rad Sci | 3 |
| RS 107 Prin of Rad Exp | 3 |
| RS 205 Rad Protection | 2 |

Fall Semester

| | |
|---|---|
| RS 161 Rad Proc I | 5 |
| RS 108 Clin Rad Tech I | 4 |
| RS 200 Rad Exp Tech | 3 |

Spring Semester

| | |
|---|---|
| RS 101 Rad Physics | 4 |
| RS 163 Rad Proc II | 4 |
| RS 164 Clin Rad Tech II | 4 |
| Rs 301 Research Problems | 1 |

SECOND YEAR
Summer Session

| | |
|---|---|
| RS 207 Clin Rad Tech III | 8 |

Fall Semester

| | |
|---|---|
| RS 221 Rad Proc Tech | 2 |
| RS 281 Rad Proc III | 3 |
| RS 301 Research Problems | 1 |
| RS 260 Clin Rad Tech IV | 6 |

Spring Semester

| | |
|---|---|
| RS 275 Imaging Systems | 2 |
| RS 291 Surv of Med & Surg Diseases | 3 |
| RS 300 Basic Radiation Biology | 1 |
| RS 261 Clin Rad Tech V | 6 |

## Certificate Program in Nuclear Medicine Technology

The approved program in nuclear medicine technology provides the student with the knowledge and skills necessary to perform complex diagnostic procedures involving the in vitro and in vivo use of radionuclides using state-of-the-art instrumentation.

Enrollment is limited to four student each year. The course of study begins the first week in June and ends the last week in May, after twelve consecutive months of clinical and didactic experience at UNM Hospital/BCMC.

Upon successful completion of the program, the student receives a certificate in nuclear medicine technology and is

* These courses can only be taken by students in the Radiologic Sciences programs

eligible to sit for national certifying examinations given by the American Registry of Radiologic Technologists, the American Society of Clinical Pathologists, and the Nuclear Medicine Technology Certification Board.

**Admission Requirements**

1. The applicant must have a baccalaureate degree, or hold certification as a radiologic technologist, medical technologist, or registered nurse.
2. Meet UNM entrance requirements.
3. A minimum grade-point average of 2.0 in all post-secondary courses.
4. Personal interview with program selection committee.
5. Application and official post-secondary transcripts must be received by the Radiologic Sciences Office by January 31, prior to June entrance.

**Nuclear Medicine Technology Curriculum***

| | |
|---|---|
| SUMMER SESSION | |
| RS-205 Radiation Protection | 2 |
| NM-311 Intro Nuc Med Tech | 3 |
| NM-315L Clin Nuc Tech I | 3 |
| | 8 |
| FALL SESSION | |
| NM-341 Nuclear Instrumentation i | 2 |
| NM-313 Clinical Nuclear Medicine I | 4 |
| NM-330 CLinical Radiopharmacy | 2 |
| NM-316L Clin Nuc Tec II | 8 |
| | 16 |
| SPRING SESSION | |
| NM-314 Clinical Nuclear Medicine II | 2 |
| NM-320 In Vitro Nuclear Medicine | 2 |
| NM-342L Nuclear Instrumentation II | 1 |
| NM-321 Nuclear Radiation Biology | 1 |
| NM-317L Clin Nuc Tech III | 10 |
| | 16 |

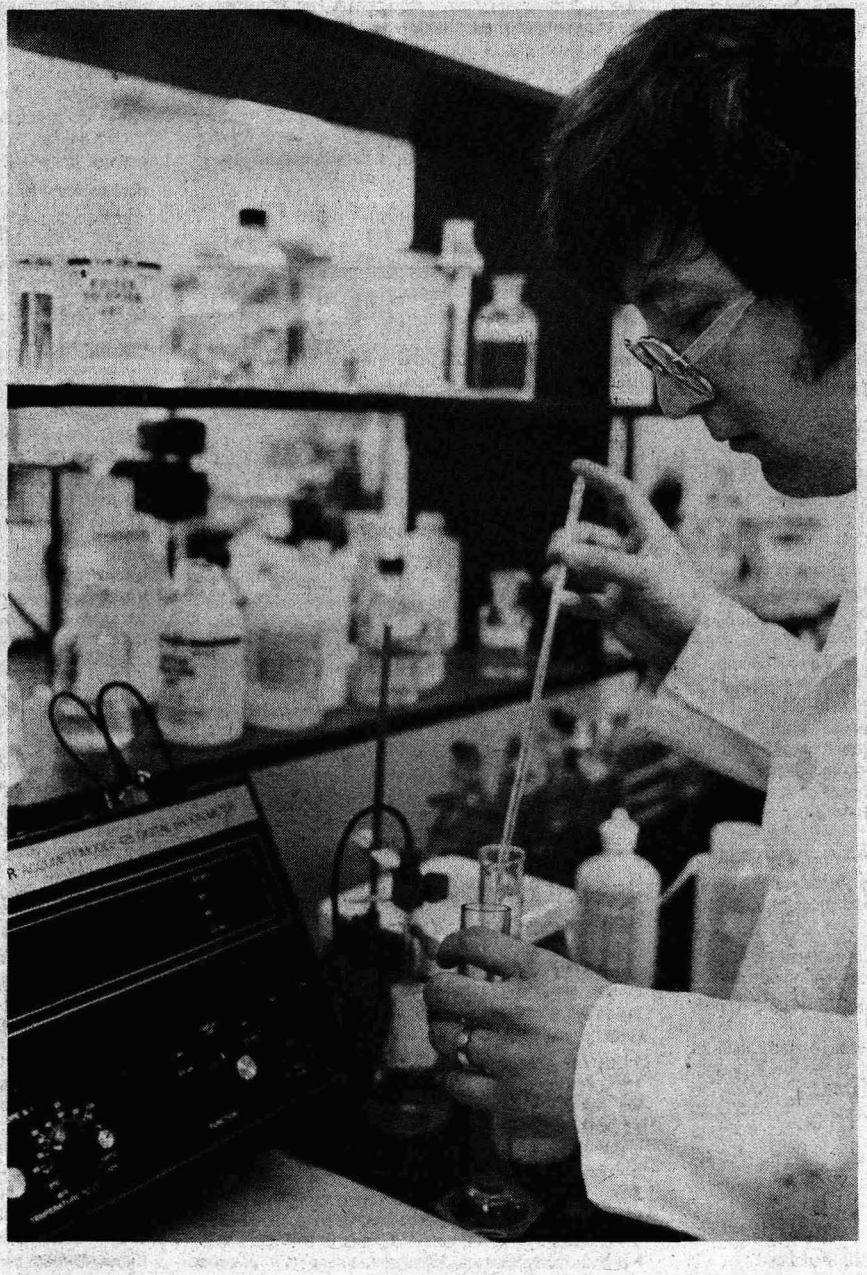
**Fees**

Tuition for the nuclear medicine program is listed in the bulletin under "Student Expenses". In addition to tuition, required books and uniforms will cost approximately $250.

**Information Requests**

Communications regarding information and applications should be addressed to Program Director, Nuclear Medicine Technology, The University of New Mexico Allied Health Sciences Center, Albuquerque, New Mexico, 87131.

* These courses may be taken only by those enrolled in the Radiological Sciences Programs.



# COLLEGE OF NURSING

THE COLLEGE OF NURSING, as an integral part of The University of New Mexico, promotes excellence in nursing through education, research, and service. The College subscribes to the belief that optimum health care is a human right. Man functions as an integrated being in a complex and changing social system, and his behavior has meaning. The professional nursing process synthesizes knowledge from the sciences and the humanities. To deliver nursing care in any setting, the professional nurse assesses biophysical, environmental, psychological, and socio-cultural cues which indicate man's attempts to cope with his life situation; plans nursing care in accord with the effects that the life process has on responses and resources of the individuals or groups receiving care; applies comprehensive nursing in the provision of preventive maintenance and restorative aspects of physical and emotional care; and evaluates nursing care given. Nursing is implicated in the life process of man and evolves its practices in response to society.

The College predicates nursing education on the belief that learning is an individual, assertive, and lifelong process.

**Purpose Of The College.** Graduates of the College of Nursing will be prepared as beginning practitioners with the ability to give patient- and family-centered nursing care in a variety of settings in the health care field. Graduates of the College of Nursing will be qualified to apply for graduate study in a clinical speciality, in teaching, or administration in nursing.

**Degrees Offered.** The College of Nursing offers two degrees, the Bachelor of Science in Nursing and the Master of Science in Nursing.

The graduate program offers concentrations in advanced nursing practice, teaching of nursing, and administration of nursing. Consult the current Graduate Programs Bulletin for details about this program.

**Accreditation.** The basic program in nursing is approved by the New Mexico Board of Nursing and is accredited by the National League for Nursing. The graduate program is accredited by the National League for Nursing.

**Licensure Of Graduates.** Graduates of the College of Nursing are eligible to take the State Board of Nursing Examinations to become licensed to practice as registered nurses.

### Admission Procedures

All students seeking acceptance to the College of Nursing must meet requirements for admission to the University.

Beginning freshman students and student transfers at the freshman level are admitted to the University College. A detailed statement of admission requirements is in the Admission and Registration section of this catalog.

In addition to meeting University requirements for acceptance by the College of Nursing, applicants should submit a College of Nursing Application Form to the Student Affairs Office, College of Nursing, The University of New Mexico, Albuquerque, New Mexico 87131. This form may be obtained from the above address.

Deadlines for submitting application are February 1, July 1, and November 1 each year. Students should submit applications early to allow for adequate advisement and processing of applications.

**Requirements For Admission.** To be considered for acceptance into the College of Nursing the student must have:

1. Submitted application and required academic records by deadline dates;
2. Completed or be enrolled in at least 26 credit hours of college work, including at least six of the first eight required courses in the freshman year;

| | |
|---|---|
| Engl 101 | 3 |
| Soc or Anthro | 3 |
| Psych 102 | 3 |
| Biol 121L or 123L | 4 |
| Chem 111L | 4 |
| Chem 212 | 4 |
| Sp Comm 221 | 3 |
| Math 102, Psych 201, or Soc 280(Statistics) | 3 |

3. Maintained grade-point averages as follows:
   a. Students transferring from University College: a grade-point average of 2.0 or better during the previous semesters. For those students who have completed fewer than 26 hours during the previous two semesters, the grade-point average will be calculated for those hours accumulated.
   b. Students transferring from other degree- granting colleges of the University: scholarship index of 2.0 while enrolled in the other degree-granting college.
   c. Transfer students from other accredited institutions shall meet all University requirements and have a grade-point average of 2.0 or better.
   d. New Mexico residents will be considered to have priority over non-New Mexico residents.

The College of Nursing reserves the right to request the student to supply any additional information as necessary.

**Examinations To Establish Credit.** All students may request to establish or validate credit by examination for courses according to the policies stated under the General Academic Regulations section of this catalog.

**Degree Completion Program For Registered Nurse Students.** All registered nurses seeking entrance into the College of Nursing must meet requirements for admission to the University and to the College of Nursing.

College credit earned in associate degree nursing programs or in hospital-based diploma schools of nursing is transferable to the University, provided the original program was offered in a regionally accredited institution and the nursing program was accredited by the National League for Nursing. It is possible that such credit may be applied toward meeting the graduation requirements for a Bachelor of Science in Nursing. See section entitled "Technical Institutes, Credit From."

The degree completion plan for registered nurse students allows for flexible lower division work as well as some self-paced progress through the upper division nursing major.

Lower division credit may be earned through the College Level Examination Program (CLEP). Thirty semester credits may be earned by successfully passing the CLEP general examinations. Additional credits may be earned by passing certain CLEP subject examinations. The following courses are lower division requirements for RN students: Chem 212; Math 102; Nurs 225, 239, and 240. With respect to Pharmacology 276, RN students may elect to take the course, receive credit for the course based upon a credit by examination process, or be exempted from the requirement by successfully passing an exemption exam.

RN students are allowed to accelerate through the upper division major according to individual capacity and need based upon a credit by examination process and enrollment in required nursing courses. Each RN student must demonstrate achievement of the terminal performance behaviors at each level as expected of all College of Nursing graduates.

Each registered nurse student is counseled individually to help clarify career goals and to plan an educational program which will be of greatest benefit in meeting those goals.

Prospective registered nurse students are urged to contact the College of Nursing Student Advisement Office prior to registration.

The College of Nursing supports career mobility for nurses.

## General Information

Students in the nursing program are subject to the general policies and procedures described in the appropriate sections of this catalog and the specific regulations included in the section, College of Nursing. All students are responsible for compliance with rules and regulations set forth in this catalog.

All services concerned with student welfare and activities are under the coordinating supervision of the Vice President for Student Affairs (see Student Services section of this catalog). In the College of Nursing a Student Affairs Committee provides for coordination and facilitation of student activities within the College.

Athletic, cultural, recreational, religious, and social activities of the University are available to all students. Students in the College of Nursing are eligible for membership in the National Student Nurses' Association through the New Mexico Student Nurses' Association.

Academic advisers are available to students in the nursing program. Students contemplating entry to the program should contact the College of Nursing Student Advisement Office.

Students are responsible for their own transportation to and from clinical agencies and for their own living arrangements (see Student Housing Section of this catalog).

**High School Preparation.** It is important that the high school student who wishes to enter the nursing program at The University of New Mexico orient his subject selection toward this goal at the earliest possible time. It is recommended that the student who intends to obtain a Bachelor of Science in Nursing take the following subjects in high school: one year of chemistry, one year of biology, one year of physics, two years of mathematics (one of which should be algebra), four years of English. These are recommended courses, NOT requirements for admission.

**Honors Program.** The purposes of the Departmental Honors Program are: (1) to study in some depth a selected nursing problem, (2) to utilize knowledge in related fields and nursing in the study process, (3) to work with one nursing faculty member in a one-to-one or small-group relationship so that through individual challenge and intellectual stimulation students' achievement may approach their potential, (4) to provide the honors student a full opportunity for vital small-group discussion and written expression.

Requirements for graduation with Departmental Honors are as follows: (1) an overall scholarship index of 3.4, (2) 6 hours in honor study in addition to the usual requirements for the degree, (3) at least 60 hours earned at the University, and (4) application for honors with approval of the faculty.

**Dean's List.** At the end of each semester the names of students who have outstanding academic records are put on the Dean's List, which is made available to University and outside news media. To qualify for the Dean's List in the College of Nursing, a student must have carried at least 12 academic hours and made a grade-point average of 3.4 or better.

**Scholarships.** Various types of financial aid are available to University students. Certain scholarships from local and national organizations and from public and private sources are available specifically for nursing students (see listing under Financial Aid section of this catalog). Information regarding scholarships and loans may be obtained from the College of Nursing Student Affairs Office and the University Student Financial Aid and Career Planning and Placement Office. Students in need of assistance are urged to investigate these sources.

**Educational Facilities.** Zimmerman Library and the Medical Center Library are both available to nursing students. The latter houses an extensive collection of books, journals, and other multimedia learning aids appropriate to nursing and medical science.

Most nursing classes are held in clinical agencies and in the Nursing-Pharmacy Building. The nursing portion of the building contains nursing simulator laboratories, seminar rooms, and additional specialized classrooms.

**Clinical Facilities.** Clinical facilities are located in the greater Albuquerque area and include University of New Mexico Hospital (BCMC), Lovelace-Bataan Medical Center, Presbyterian Hospital Center, Anna Kaseman Hospital, Vista Sandia Hospital, St. Joseph Hospital, Veterans Administration Hospital, Bernalillo County Mental Health Center, Maternal-Infant Care Clinics, Indian Health Service stations and centers, U.S. Air Force Hospital-Kirtland Air Force Base, and other facilities in outlaying areas in New Mexico.

Special learning opportunities such as field trips to other agencies may be arranged. Many clinical agencies make libraries and classrooms available to nursing students.

**Health Program.** Students in the College of Nursing follow the health requirements described in the Admission and Registration section of this catalog and may use the health service described in the Student Services section of this catalog. Nursing students are encouraged to carry insurance for hospitalization and medical care. Students who do not have health insurance will find that an adequate policy may be purchased through the University at time of registration.

Students must present the following prior to registering for a nursing practice course:

1. Up-to-date immunizations as specified by the College of Nursing.

2. An annual tuberculin test.
The annual tuberculin test or T.B. screening and the required immunizations can be obtained at the Student Health Center. A copy of the result must be filed with the College of Nursing Student Affairs Office.

In the case of pregnancy, the student must assume complete responsiblity for her own safety and welfare.

**Uniforms.** Students are responsible for obtaining appropriate uniforms to be worn during clinical practice periods. Information regarding uniforms may be obtained at the College of Nursing Student Affairs Office. Caps are available at the north campus UNM Bookstore.

**Fees.** Students enrolled in nursing laboratory courses will be expected to pay a fee. Fees may also be charged for required educational materials. A fee may be charged for standardized nursing achievement tests for regularly enrolled senior students. Information about other fees and expenses may be obtained in the Student Affairs Office.

Each student is required to obtain nursing student liability insurance before beginning clinical experience.

## Academic Regulations

Students in the nursing program are subject to the general regulations of the University and, in addition, to the specific regulations in the College of Nursing.

Students in the College of Nursing must be enrolled in nursing courses and/or progressing toward the Bachelor of Science in Nursing. Students failing to meet this requirement are subject to administrative disenrollment from the College of Nursing.

College of Nursing students who withdraw from the University may return to the College. Because of constraints in the clinical facilities, however, the student must notify the College of Nursing in writing of his/her intent to return. Notice must be received by March 15 for return summer or fall semester and by November 1 for spring semester. Because a returning student is subject to the regulations of the Bulletin in effect at the time of readmission, she/he is subject to a reevaluation of his/her academic standing. The student must receive academic advisement prior to registration.

Students must have a cumulative scholarship index of 2.0 or better to be eligible to enroll in upper division nursing courses.

Students must be admitted to the College of Nursing before enrolling in Level I Nursing and subsequent levels.

Students must earn a grade of C or better in all required nursing courses, pharmacology, microbiology, and human anatomy and physiology. All nursing courses may be taken once and repeated once. Prior to repeating a nursing course a student's records will be reviewed by the Academic Standards Committee; progress will be monitored by this committee.

## Requirements for Graduation

The Bachelor of Science in Nursing is granted to basic and registered nurse students on fulfillment of the following requirements:

1. Completion of 136 semester hours of course work of the prescribed curriculum.
2. Completion of at least 70 semester hours of upper division course work. Such courses are numbered 300 or above.
3. Compliance with the minimum residence requirements, as stated in the General Academic Regulations section of this catalog.
4. Maintenance of an overall scholarship index of 2.0 minimum.
5. Unanimous recommendation for the degree by the faculty of the College of Nursing.

**Curriculum**

| First Year | |
|---|---|
| Engl 101 Wrtg w/ Rdgs in Expos | 3 |
| Soc or Anthro | 3 |
| Psych 102 General Psych II | 3 |
| Sp Com 221 Interpersonal Comm | 3 |
| Chem 111L Elem of Gen Chem | 4 |
| Chem 212 Integ org Ch & Biochem | 4 |
| Biol 121L or 123L Prin of Biol | 4 |
| 123 Biol for Hlth Rel Sci | |
| Math 102, Psych 201, or Soc 280 (Statistics) | 3 |
| Electives | 6 |
| | 33 |

| Second Year | |
|---|---|
| Biol 237 Human Anat & Phys I | 3 |
| Biol 247L Anat Phys H S Lab I | 1 |
| Biol 239L Hlth Sci Micro | 4 |
| H Ec 125 Intro Nutri | 3 |
| Nurs 225 Intro Concept Nurs | 3 |
| Nurs 239 N/P Pathophysiology | 3 |
| Biol 238 Hum Anat & Phys II | 3 |
| Biol 248L Anat Phy Sci Lab II | 1 |
| Nurs 324L App G & D to Hlth Care | 4 |
| Pharm 276 Prin of Pharmacol | 3 |
| Nurs 240 N & P Patho Physiology | 3 |
| Elective | 3 |
| | 34 |

| Third Year | |
|---|---|
| Nurs 331L Prob Solv Hlth Thpy Pat | 5 |
| Nurs 332 Level I Nurs | 2 |
| Nurs 333 Level I Nurs | 2 |
| Nurs 334L Nurs Intrvt Hlth Care | 4 |
| Elective | 4 |
| Nurs 335L Hlth Care Del | 3 |
| Nurs 336L Interact - Comm | 5 |
| Nurs 337L Nurs Process | 6 |
| Elective | 3 |
| | 34 |

| Fourth Year | |
|---|---|
| Nurs 441L Hlth Care Delivery | 5 |
| Nurs 442L Interact Comm | 5 |
| Nurs 443L Nurs Process | 4 |
| Elective | 3 |
| Nurs 444L Advanced Nursing | 8 |
| Nurs 445L Elec Experience | 8 |
| Elective | 2 |
| | 35 |

Students who participate in the General Honors Program may apply General Studies seminars to satisfy appropriate requirements upon approval by the Dean, College of Nursing.

Students who wish to make substitutions or exceptions to the program may present their request to Academic Standards Committee.

See UNM Schedule of Classes for further information prior to registration.

It is the student's responsibility to meet all departmental requirements.

# COLLEGE OF PHARMACY

THE COLLEGE OF PHARMACY at The University of New Mexico offers a five-year undergraduate program leading to the degree of Bachelor of Science in Pharmacy. This program consists of one year of preprofessional training followed by four years of study in the College of Pharmacy. The College of Pharmacy also cooperates with the Robert O. Anderson School of Management to offer a combined B.S. in Pharmacy/M.B.A. program (see below).

The objective of the College of Pharmacy is to provide a program of excellence in the education of the professional pharmacist.

Professional training is directed to the teaching of those facts, concepts, and unique skills that the pharmacist will require as a health scientist in the future. In addition to their scientific training, stress is placed on instilling in the students a moral, civic, and social responsibility to the public they will serve. The ethical relationship of the pharmacist to the public, to the profession, to the physician, and to other health professionals is emphasized, as is the role of the pharmacist as a consultant to the public on various health-related matters.

The College of Pharmacy provides consultation to the profession of pharmacy and other health sciences in the state of New Mexico. The New Mexico Poison, Drug Information and Medical Crisis Center of the College of Pharmacy provides poison information for the public and health care institutions, drug information support for health professionals and is an important link in the state's emergency medical response system. All services are provided 24 hours a day. Cooperative teaching, research, and service programs exist between the College and the University of New Mexico Hospital (BCMC). The College of Pharmacy also operates a centralized radiopharmacy which supplies service to various hospitals and institutions throughout the state of New Mexico.

### Opportunities in Pharmacy

The profession of pharmacy offers, to properly trained individuals, a wide variety of opportunities for service in interesting and satisfying positions. More than 75 percent of the graduates of colleges of pharmacy enter community pharmacy practice. Opportunities in this area are available in independent pharmacies, prescription centers, and in chain pharmacies. An increasing number of graduates are entering the practice of hospital pharmacy in civilian and governmental hospitals, as well as in skilled nursing facilities. Others occupy positions as manufacturing pharmacists, pharmaceutical sales representatives, analysts for state and federal food and drug departments, and as pharmacists in the Army, Navy, Air Force, Public Health Service, and Veterans Administration. Radiopharmacists, i.e., pharmacists handling radioactive drugs, will be in increasing demand in the near future. Limited numbers of pharmacists are engaged as administrators in pharmaceutical organizations and editing or writing for pharmaceutical publications. Positions as research scientists in manufacturing plants and as teachers in colleges of pharmacy are open to those who prepare themselves by pursuing graduate work toward advanced degrees.

### Recognition

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education, the national accrediting agency in pharmaceutical education, and holds membership in the American Association of Colleges of Pharmacy.

### Financial Aid

In addition to financial aid that is available to University students generally, certain scholarships and loans are available specifically to students in the College of Pharmacy. Information and applications may be obtained from the Chairperson, Grants and Financial Aids Committee, College of Pharmacy. A list of pharmacy scholarships and loans follows:

**William C. Fiedler Scholarship.** The income from the William C. Fiedler Memorial Fund is available for scholarships to pharmacy students. Awards are made on the basis of these criteria; Excellent scholastic acheivements and demonstrated financial need.

**Burroughs Wellcome Pharmacy Education Scholarship.** The income from a trust fund is available for scholarships to pharmacy students who can demonstrate financial need. Funds for this trust are presented to the College of Pharmacy by the Burroughs Wellcome Pharmacy Education Program on behalf of practicing pharmacists in the state of New Mexico.

**The Arthur B. Hall and Annie Mae Hall Pharmacy Scholarship.** The income from a $5,000 trust fund is available for a scholarship award to one or more students in the College of Pharmacy who can demonstrate financial need.

**McKesson and Robbins Scholarship.** One scholarship of $150 is awarded to a third, fourth or fifth-year student in the College of Pharmacy on the basis of scholarship and need. The scholarship is made possible by an annual cash award from the El Paso and Amarillo Divisions of McKesson and Robbins, Inc.

**Presidential Scholarships.** Presidential scholarships of $900 annually and renewable for three years are available for incoming students from New Mexico. These scholarships are awarded strictly on the basis of academic ability and renewal is dependent upon maintenance of a prescribed grade-point average. Additional information is available from high school counselors throughout the state.

**Health Professions Scholarship for First Professional Year Students.** One scholarship is awarded annually to a first professional year student in the College of Pharmacy. The scholarship is awarded competitively on the basis of exceptional financial need. Other eligibility requirements include U.S. citizenship (or permanent residency in the U.S.) and full-time enrollment (12 hours or more) in good standing (2.0 scholastic index or better). The scholarship is made possible by a grant from the Bureau of Health Manpower of the Department of Health and Human Services. Deadline for application is August 1. Interested students may obtain information and application by contacting the Chairperson, Grants and Financial Aids Committee, College of Pharmacy.

**Pharmacy Student Loan Program.** Low-interest loans, from federal funds, are available to regularly enrolled students in the College of Pharmacy who can demonstrate financial need.

The student must be enrolled full-time in the College of Pharmacy to qualify for a loan under this program. Interested students should apply to the Director of Student Aids, Mesa Vista Hall. Deadlines for applications are June 1 for the fall semester and November 1 for the spring semester.

### Laws Relating To Licensure As A Pharmacist

In order to become eligible for licensure as a registered pharmacist upon graduation, the pharmacist intern must first register as a pharmacy intern and serve a designated period of internship. Pharmacy students are advised to begin their internship training as early as possible in their academic career. By doing so, it may be possible to be eligible for Board of Pharmacy examinations and licensure immediately upon graduation.

The qualifications for registration as a pharmacist intern under the New Mexico Pharmacy Act are as follows: "an applicant shall: be not less than 18 years of age, have completed not less than 30 semester hours or the equivalent thereof in an accredited college of pharmacy, and meet other requirements established by regulation of the Board of Pharmacy."

The qualifications for registration as a pharmacist by examination under the New Mexico Pharmacy Act are as follows: "an applicant shall: be not less than 18 years of age and not addicted to drugs or alcohol, hold a degree from an accredited college of pharmacy, have not less than one year of internship experience, and pass an examination prepared and administered by the Board of Pharmacy."

Additional information on registration as a pharmacy intern and licensure as a pharmacist may be obtained from the New Mexico Board of Pharmacy, Pan American Building, Suite 216, 2340 Menaul Blvd., NE, Albuquerque, New Mexico 87107.

### Professional Conduct

Pharmacy is a profession based on high standards of ethical, moral and legal accountability. These standards are applicable to all practitioners, clinicians, and students of the profession.

As members of the College of Pharmacy, the students, faculty, and staff of the College of Pharmacy should demonstrate responsibility by practicing the highest level of professional behavior and maintaining this level by observing all laws, including those dealing with the use, abuse, and control of dangerous drugs and controlled substances.

Any act not in keeping with these standards, duties, and laws shall be deemed a violation of professional conduct. The College of Pharmacy reserves the right to take disciplinary action by appropriate due process.

### High School Preparation

It is important that the high school student who wishes to pursue the pharmacy program at The University of New Mexico College of Pharmacy orient his subject selection in the proper direction at the earliest possible time.

It is recommended that the student intending to obtain a Bachelor of Science in Pharmacy take the following subjects in high school: one year of chemistry; one year of biology; one year of physics; mathematics, including at least two years of algebra and one year of geometry and trigonometry; four years of English; and one year of social sciences and/or humanities. These are recommended subjects, NOT requirements for admission to the College of Pharmacy.

### WICHE Program

The College of Pharmacy is a participant in the reciprocal tuition program coordinated by the Western Interstate Commission on Higher Education (i.e., WICHE). Under the program, pharmacy students may be eligible for tuition assistance if they are a resident of a member western state that does not have a school or college of pharmacy and who participates in the pharmacy component of the WICHE program. Additional information concerning the WICHE program may be obtained from: Western Interstate Commission for Higher Education (WICHE), Student Exchange Programs, P.O. Drawer P, Boulder, Colorado 80302, telephone (303) 497-0214.

### Combined Program

The College of Pharmacy cooperates with the Anderson School of Management in offering both the B.S. in Pharmacy and the M.B.A. degrees in a combined program saving the student approximately one semester.

After completion of the requirements for the B.S. degree, it normally takes an additional three semesters to obtain the M.B.A. degree.

Further information on the details of the combined program may be obtained by writing to the Director of M.B.A. programs of the Anderson School of Management of The University of New Mexico.

### Residency in Radiopharmacy

The University of New Mexico Radiopharmacy offers a one-year residency program in radiopharmacy. Applicants are primarily selected from individuals who are practicing registered pharmacists eligible for licensure or reciprocity in the state of New Mexico. Upon completion of the program the individual is fully qualified to practice radiopharmacy in both dispensing and clinical settings. A certificate is issued to all participants who satisfactorily complete the residency. For application requirements and specific information, write: The University of New Mexico Radiopharmacy, University of New Mexico, Albuquerque, New Mexico 87131.

## Admission

The College of Pharmacy admits students for the summer session and fall semester only.

All freshman students are admitted to The University College. A detailed statement of admission requirements to University College is in the Admission and Registration section of this catalog.

### Minimum Admission Requirements

1. Completion of at least 30 hours, which should include all preprofessional year course requirements, or the equivalent, as listed below:

| | |
|---|---|
| English (comp and rhetoric) | 6 semester hours |
| General biology | 8 semester hours |
| (UNM equivalent, Biology 123, | 4 semester hours) |
| General chemistry | 8 semester hours |
| Calculus | 4-6 semester hours |
| Electives, to make a total of | 30 semester hours. |

Conditional admission for any applicant who has not completed the listed course requirements will be considered by the Pharmacy Admissions Committee on an individual basis.

2. (a) A scholarship index of at least 2.2 on all hours attempted in all colleges and universities
   or
   (b) If the cumulative scholarship index in (a) is less than 2.2, a scholarship index of at least 2.2 on all hours attempted in the previous 2 sessions of enrollment in a college or university, provided that, if fewer than 30 semester hours were attempted in the previous 2 sessions, a scholarship index of at least 2.2 shall be required on all work attempted in as many consecutive sessions as are necessary to bring the student's total semester hours to 30.
3. Completion of the Pharmacy College Admission Test (PCAT). The PCAT must be taken prior to admission or during the first year of enrollment in the College of Pharmacy. It is currently used to provide necessary data for validity and reliability studies. Applications for the test may be obtained from the College of Pharmacy or by writing to the Pharmacy College Admission Test, The Psychological Corporation, 304 East 45th Street, New York, New York 10017.

## Application Procedures

**From University College**

In addition to filing the transfer petition in the University College Office, students are required to submit the following credentials to the Chairperson of the Pharmacy Admissions Committee: (1) Advisement copy of UNM transcript, (2) Official or advisement copy of transcripts from all other colleges or universities attended (if applicable), (3) Personal, Biographical, and Educational Information form. This form may be obtained from the College of Pharmacy Student Affairs Office.

**From Other UNM Degree Granting Colleges**

Students are required to submit the following credentials to the Chairperson of the Pharmacy Admissions Committee: (1) Advisement copy of UNM transcript, (2) Official or advisement copy of transcripts from all other colleges or universities attended (if applicable), (3) Personal, Biographical, and Educational Information form. This form serves as the unofficial application form and may be obtained in the College of Pharmacy Student Affairs Office.

**From UNM Non-Degree**

In addition to filing the application for admission in the University of New Mexico Admissions Office, students are required to submit the following credentials to the Chairperson of the Pharmacy Admissions Committee: (1) Advisement copy of the UNM transcript, (2) Official or advisement copy of transcripts from all other colleges or universities attended (if applicable), (3) Personal, Biographical, and Educational Information form. This form may be obtained in the College of Pharmacy Student Affairs Office.

**Transfer from Other Colleges or Universities**

Students are required to submit the following to The University of New Mexico Office of Admissions: (1) Application for Undergraduate Admission to The University of New Mexico which also serves as The application for admission to the College of Pharmacy. No additional application forms are necessary. (2) Official transcript(s) from all colleges and universities attended*. (3) Other credentials as required by The University of New Mexico.

Students are required to submit the following to the Chairperson of the Pharmacy Admissions Committee: (1) Official transcript(s) from all colleges or universities attended*, (2) Courses in progress which are not included on transcript(s), (3) PCAT scores, (4) Personal, Biographical and Educational Information form.

The deadline for receipt of application and credentials is no later than one week before classes begin for the summer session and not later than August for the fall semester.

For additional information and advisement on admission requirements and procedures, students should contact: Chairperson, Admissions Committee, College of Pharmacy, The University of New Mexico, Albuquerque, New Mexico 87131, Telephone (505) 277-2625.

* Note that two (2) copies of the the official transcript(s) are required—one for The University of New Mexico Office of Admissions and one for the College of Pharmacy.

## Scholastic Regulations

In general, students will be governed by the scholastic regulations described under "General Academic Regulations". In addition, the faculty of the College of Pharmacy has adopted the following rules and regulations:

## General Academic Regulations

Requests for waiver of these regulations should be submitted to the Dean of the College of Pharmacy for consideration by the faculty of the College of Pharmacy.

1. Credit will not be transferred for any required professional course* or professional elective* taken in another institution if a grade of D or F has been previously received in the course at The University of New Mexico.
2. Only nonprofessional electives may be taken under the Credit (CR) Grade Option, subject to the regulations as stated in the General Academic Regulations section of this catalog.
3. Completion of the curriculum of the first four years is a requirement for enrollment in the fifth-year option.
4. A student is required to complete the number of credit hours required by the fifth-year option after he/she has declared the option and has enrolled in the fifth year.

**Probation/Suspension Regulations**

Requests for waiver of these regulations should be submitted to the Chairperson of the Academic Scholarship Committee for consideration by the Committee.

1. Probation or suspension incurred while in residence may not be removed by taking extension or correspondence courses.
2. No student will be permitted to enroll in the courses of the fifth year if his/her grade-point average is less than 2.0.
3. All students who have been placed on probation are required to obtain counseling from their academic adviser in the College.
4. A student may not repeat a pharmacy course more than once unless he/she has shown an improvement in letter grade or received a W.

**Maximum Number of Hours**

Students in the College of Pharmacy may not enroll for more than 20 hours per semester without prior approval from the Assistant Dean for Student Affairs of the College of Pharmacy.

**Academic Advisement**

The College of Pharmacy Advisement Center is located in rooms 183 and 185 of the Pharmacy/Nursing Building.

The Chairperson of the Admissions Committee of the College of Pharmacy is the academic adviser for all pre-pharmacy students.

The Assistant Dean for Student Affairs is the academic adviser for all pharmacy students enrolled in the second, third, and fourth years.

Fifth-year pharmacy students are assigned to a faculty member in the option which they select for the fifth year.

**Minimun Residence Requirement**

Students entering the College of Pharmacy with advanced standing from nonpharmacy colleges are required to complete not less than six semesters of resident study before they will be recommended for the degree of Bachelor of Science in Pharmacy. Exceptions to this rule must be petitioned for by the student and voted upon by the faculty. Those transferring from other colleges of pharmacy may be given residence credit for more than two years of work, provided the courses and credit are applicable to the work outlined in the curriculum of this college.

## Graduation Requirements

The University of New Mexico College of Pharmacy awards the degree of Bachelor of Science in Pharmacy upon completion of all the specified requirements.

Requests for waiver of any of these requirements should be submitted to the Dean of the College of Pharmacy for consideration by the faculty of the College of Pharmacy.

* 1. Professional Courses: Offered by the College of Pharmacy only. 2. Professional electives: Courses offered by the the College of Pharmacy and courses offered by other colleges and departments as approved by the fifth-year option adviser.

The candidate for this degree must:

1. Complete all the work outlined in the pharmacy curriculum, which includes:
   a. 160 semester hours of course work.
   b. 18 hours of nonprofessional electives*. Nonprofessional electives shall include courses offered in the Colleges of Arts and Sciences, Education**, Engineering, Fine Arts***, and Nursing; the Robert O. Anderson School of Management; the School of Architecture and Planning; the School of Law; the School of Medicine; the Dental Programs; the Departments of Aerospace Studies and Naval Science.
   c. All required courses.
2. Maintain a 2.2 in all UNM work and a 2.2 in all pharmacy courses.
3. Receive no more than two D grades in professional courses.
4. No student will be allowed to graduate with an F grade in any pharmacy course.
5. Satisfy the minimum residence requirement.

**CURRICULUM LEADING TO THE BACHELOR OF SCIENCE IN PHARMACY**

FIRST YEAR
(Preprofessional Year)
First Semester

| | |
|---|---|
| English 101 Wrtg w/Rdgs in Expos | 3 |
| Chem 121L Gen Chem | 4 |
| *Math 180 Calc for Soc and Biol Scl | 3 |
| **Nonprofessional electives | 6 |
| | 16 |

Second Semester

| | |
|---|---|
| *** Engl 102 Analytical Wrtg | 3 |
| Chem 122L Gen Chem | 4 |
| *Math 181 Calc for Soc and Biol Sci | 3 |
| ****Biol 123L Biol for Hlth Rel Sci | 4 |
| **Nonprofessional elective | 3 |
| | 17 |

SECOND YEAR
(First Professional Year)
First Semester

| | |
|---|---|
| Pharm 291 Pharm Orient | 1 |
| Chem 301 Organic Chem | 3 |
| Chem 303L Organic Lab | 1 |
| Biol 237 Hum Anat and Physiol I | 3 |
| Biol 247L Hum Anat and Physiol Lab I | 1 |
| Pharm 239L Pharm Path I | 2 |
| Physics 151 Gen Physics | 3 |
| Pharm 343 Pharm Calculations | 2 |
| | 16 |

Second Semester

| | |
|---|---|
| Chem 302 Organic Chem | 3 |
| Chem 304L Organic Lab | 1 |
| Biol 238 Hum Anat and Physiol II | 3 |
| Biol 248 Hum Anat and Physiol Lab II | 1 |
| Pharm 240 Pharm Path II | 2 |
| Physics 152 Gen Physics | 3 |
| Nonprofessional elective | 3 |
| | 16 |

THIRD YEAR
(Second Professional Year)
First Semester

| | |
|---|---|
| Pharm 345 Pharmaceutics I | |
| Pharm 292 Soc-Econ of Hlth Care Del | |

*No credit allowed for University Skills Program course (English 100; Mathematics 100; Natural Science 100 Social Science 100) or for Mathematics 120.

** No more than two hours of Basic Instruction - Activit Physical Education; no credit allowed for Bus Ed 111 112, 114, or 262.

***No more than four hours of the following music ensem ble courses: 143, 233, 241, and 243.

***English 220 is accepted in lieu of English 102.

*Math 162 is accepted in lieu of Math 180 and 181.

****Biology 121L and 122L is accepted in lieu of Biolo 123L

Nonprofessional electives: Courses offered by other co leges and departments (see restrictions under gradu tion requirements).

| | |
|---|---|
| Chem 423 Biochemistry | 3 |
| Biol 239L Microbiology for Hlth Sci | 5 |
| Nonprofessional elective | 3 |
| | 18 |

Second Semester

| | |
|---|---|
| Pharm 346L Pharmaceutics II | 4 |
| Pharm 373 Pharmacology I | 3 |
| Pharm 296 OTC Drugs and Prod | 2 |
| Pharm 302 Immunology for Pharm | 3 |
| Chem 253 Quant Analysis | 4 |
| | 16 |

## FOURTH YEAR
(Third Professional Year)

First Semester

| | |
|---|---|
| Pharm 441 Pharmaceutics III | 3 |
| Pharm 431 Clin Therapeutics I | 4 |
| Pharm 461 Org Pharm Chem I | 3 |
| Pharm 475 Pharmacology II | 4 |
| | 14 |

Second Semester

| | |
|---|---|
| Pharm 442 Pharmaceutics IV | 3 |
| Pharm 432 Clin Therapeutics II | 4 |
| Pharm 445L Pharmaceutics V | 1 |
| Pharm 462 Org Pharm Chem II | 3 |
| Pharm 476 Pharmacology III | 4 |
| Nonprofessional elective | 3 |
| | 18 |

## FIFTH YEAR
(Fourth Professional Year)

In the fifth pharmacy year, the student will be able to select an option or area of specialty. These are the professional areas of:

1. General pharmacy
2. Community pharmacy
3. Hospital pharmacy
4. Radiopharmacy
5. Preparation for post-baccalaureate studies

In the area of preparation for post-baccalaureate studies, the student may select specialized courses in preparation for graduate studies toward a Master of Science or a Ph.D. in Pharmaceutical Chemistry, Pharmacology, Toxicology, Pharmaceutics, Pharmacy Administration, or Pharmacognosy; Master of Business Administration; Doctor of Pharmacy in Clinical Pharmacy; Master of Science in Radiopharmacy; or Master of Science or Residency Certificate in Hospital Pharmacy.

*The fifth-year option must be selected (in the spring) by all fourth-year students at least one week prior to the start of registration for the fall semester of the fifth year. The option must be declared in writing after approval of the faculty member(s) concerned. Enrollment for the radiopharmacy option, the hospital pharmacy option, and the preparation for post-baccalaureate studies option may be limited.*

*Requests for change of option must be initiated in the Office of the Assistant Dean for Student Affairs.*

*When a student selects a given option, he/she is required to take all of the required courses in the option as approved by the option adviser.*

*Students are reminded that it is their individual responsibility to make certain that sufficient elective hours are secured in the fifth-year program to attain the total of 160 credit hours Required for graduation.*

### 1. GENERAL PHARMACY OPTION

First Semester

| | |
|---|---|
| Pharm 433L Clin Rot I | 2 |
| Pharm 437 Clin Pharm V Lect | 3 |
| Pharm 493L Pharm Practice I | 2 |
| Professional Courses | 8 |
| | 15 |

Second Semester

| | |
|---|---|
| Pharm 422 Pharmacy Law | 3 |
| Pharm 434L Clin Pharm Rot II | 1 |
| Pharm 494L Pharm Practice II | 2 |
| Professional courses | 8 |
| | 14 |

### 2. COMMUNITY PHARMACY OPTION

First Semester

| | |
|---|---|
| Pharm 421 Pharm Acctg and Fin Mgmt | 3 |
| †Pharm 423 Prin Pharm Adm/Org Behav | 3 |
| Pharm 435L Comm Pharm Rot I | 5 |
| Pharm 437 Clin Pharm V Lect | 3 |
| Pharm 482 Toxicology I | 3 |
| | 17 |

Second Semester

| | |
|---|---|
| Pharm 422 Pharmacy Law | 3 |
| Pharm 424 Pharm Retail Mgmt | 3 |
| Pharm 434L Clin Pharm Rot II | 3 |
| Nonprofessional electives | 3 |
| Professional electives | 0-4 |
| | 12-16 |

### 3. HOSPITAL PHARMACY OPTION

First Semester

| | |
|---|---|
| Pharm 482 Toxicology I | 3 |
| Pharm 433L Clin Pharm Rot I | 2 |
| Pharm 437 Clin Pharm V Lecture | 3 |
| Pharm 451 Instit Pharm Prac | 3 |
| Pharm 457 Hosp Pharm Lab | 1-3 |
| Pharm 459L Sterile Preparations | 4 |
| | 16-18 |

Second Semester

| | |
|---|---|
| †Pharm 423 Prin Pharm Adm/Org Behav | 3 |
| Pharm 434L Clin Pharm Rot II | 2 |
| Pharm 452L Instit Pharm Mgmt | 4 |
| Pharm 454L Proj in Hosp Pharm | 3 |
| Pharm 422 Pharmacy Law | 3 |
| | 15 |

### 4. RADIOPHARMACY OPTION

Summer Session

| | |
|---|---|
| •RT 205 Radiation Protection | 2 |
| Pharm 417 Radiopharmacy Rot I | 0-4 |
| Pharm 498 Problems | 0-3 |
| | 0-9 |

First Semester

| | |
|---|---|
| •RT 205 Radiation Protection | 2 |
| NMDT 313 Clin Nuc Med | 4 |
| NMDT 341 Nuc Instrument | 2 |
| Pharm 412L Radiopharmacy | 4 |
| #Pharm 417 Radiopharmacy Rot I | 0-4 |
| Pharm 493 Pharm Practice | 2 |
| | 11-16 |

Second Semester

| | |
|---|---|
| NMDT 321 Nuc Rad Biol | 1 |
| Pharm 416 In-Vitro Studies | 2 |
| Pharm 418L Radiopharmacy Rot II | 5 |
| Pharm 422 Pharmacy Law | 3 |
| Pharm 459L Sterile Preparations | 4 |
| Professional electives | 0-6 |
| | 16-22 |

Note: The students are also required to complete 15 intern hours per month in the radiopharmacy during their fifth year in addition to the regular course work. A minimum of 300 hours in radiopharmacy are required to complete the option. Accumulation of intern hours **prior** to enrollment in the fifth-year option can often be arranged.

### 5. PREPARATION FOR POST-BACCALAUREATE STUDIES OPTION

a. Combined B.S. Pharm./M.B.A. Program

First Semester

| | |
|---|---|
| Pharm 421 Pharm Acctg and Fin Mgmt | 3 |
| *Mgt 501 Quant Analysis II | 3 |
| Mgt 502 Acctg and Mgmt Inf Sys I | 3 |
| Mgt 504 Organiz Econ I | 3 |
| Mgt 506 Organiz Behav I | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| Pharm 422 Pharm Law | 3 |
| Pharm 426 Pharmaceutical Mkt | 3 |
| Pharm 434L Clin Pharm Rot II | 3 |
| Mgt 503 Acctg and Mgmt Inf Sys II | 3 |
| Mgt 507 Organiz Behav II | 3 |
| | 15 |

b. Pharmacy Administration

First Semester

| | |
|---|---|
| Pharm 421 Pharm Acctg and Fin Mgmt | 3 |
| Pharm 423 Prin Pharm Adm/Org Behav | 3 |
| Pharm 425 Sem in Pharm Adm | 1 |
| Pharm 433L Clin Pharm Rot I | 3 |
| Pharm 437 Clin Pharm V Lect | 3 |
| | 13 |

Second Semester

| | |
|---|---|
| Pharm 422 Pharm Law | 3 |
| Pharm 424 Pharm Retail Mgmt | 3 |
| Pharm 426 Pharmaceutical Mkt | 3 |
| Psych 201 Intro to Prob and Stat | 3 |
| Pharm 498 Problems | 4 |
| | 16 |

c. Clinical Pharmacy

First Semester

| | |
|---|---|
| §Pharm 433L Clin Pharm Rot I | 5-11 |
| Pharm 437 Clin Pharm V Lect | 3 |
| Pharm 482 Toxicology | 3 |
| Professional elective | 3 |
| | 14-20 |

Second Semester

| | |
|---|---|
| Pharm 422 Pharm Law | 3 |
| §Pharm 434L Clin Pharm Rot II | 9-15 |
| Professional elective 0-3 | |
| | 12-21 |

d. Pharmacology, Toxicology, Pharmaceutical Chemistry Option

First Semester

| | |
|---|---|
| Pharmacy 477 Immunopharmacology | 2 |
| Pharmacy 463 Adv Pharm Chem I | 3 |
| Pharmacy 467 Chem Nat Prod I | 3 |
| Pharmacy 485 Biochem Phmcol Lect | 2 |
| Pharmacy 483L Pharm Chem/Biochem Phmcol Lab | 2 |
| Pharmacy 487 Toxic Environment | 2 |
| | 14 |

Second Semester

| | |
|---|---|
| Pharmacy 422 Pharmacy Law | 3 |
| Pharmacy 434L Clin Pharm Rot II | 3 |
| Pharmacy 464 Adv Pharm Chem II | 3 |
| Pharmacy 468 Chem Nat Prod II | 3 |
| Pharmacy 484L Stat Toxicology | 3 |
| Ed Fdn 501 Fund Stats in Educ I | 3 |
| | 18 |

e. Pharmacognosy

First Semester

| | |
|---|---|
| Pharm 433L Clin Pharm Rot I | 3 |
| Pharm 467 Chem of Nat Prod I | 3 |
| Pharm 493L Pharm Practice I | 2 |
| Chem 315 Intro Phys Chem | 4 |
| Biol 363L Flora of NM | 3 |
| | 15 |

Second Semester

| | |
|---|---|
| Pharm 422 Pharm Law | 3 |
| Pharm 468 Chem of Nat Prod II | 3 |
| Pharm 494L Pharm Prac II | 2 |
| Biol 372 Plant Morphogenesis | 4 |
| Professional electives | 2-4 |
| | 14-16 |

f. Pharmaceutics

First Semester

| | |
|---|---|
| Pharm 433L Clin Pharm Rot | 3 |
| Pharm 449 Adv Pharmacokinetics | 3 |
| Pharm 450L Clin Pharm | 3 |
| Pharm 497 Problems | 1-5 |
| Professional electives | 2-3 |
| | 12-17 |

†Offered by Robert O. Anderson School of Management as Mgt. 361

•RT 205 can either be taken in the summer or fall semester but is required before or concurrent with enrolling in Radiopharmacy Rot I.

#Pharm 417 can be taken in the summer or in the fall or can be split up between summer and fall semesters. A minimum of four hours is required.

*Mgt 501-510 are acceptable for credit by both College of Pharmacy and the Robert O. Anderson School of Management.

§Minimum of 14 hours of Clinical Pharmacy Rotation is required for the year, including 5 hours minimum the first semester and 7 hours minimum the second semester.

| Second Semester | |
|---|---|
| Pharm 422 Pharm Law | 3 |
| Pharm 446 Adv Phys Pharm | 3 |
| Pharm 498 Problems | 1-5 |
| Professional electives | 5-6 |
| | 12-17 |

# DENTAL PROGRAMS

The Dental Programs offer three programs:

1. A dental assisting program, which is three semesters in length, leads to a Certificate of Proficiency in Dental Assisting and eligibility to take the national Certification Examination for Dental Assisting.
2. A dental hygiene program which leads to an Associate of Science in Dental Hygiene. This program includes one year of preprofessional pre-entrance requirements and two professional years.

   Note: Enrollment in the Dental Programs curriculum is restricted to accepted students in the Dental Programs.
3. A program leading to the Bachelor of Science in Dental Hygiene.

   *Note: The bachelor of science degree program in dental hygiene is presently undergoing curriculum and policy changes. For further information contact the Dental Programs.*

## Dental Assisting

Dental assistants serve as auxiliary personnel to the dental profession; Dental assistants perform supportive duties to the dentist or serve as expanded auxiliaries in some dental procedures, assume responsibilities in instrument sterilization, x-ray exposure and developing, and other duties assigned by the dentist. Individuals trained as dental assistants may be employed immediately upon completion of their education. Licensure is not required at this time, but all students must take the National Certification Examination.

The Dental Assisting Program is a three-semester curriculum which begins each year in the summer semester only. Students who have taken six-semester hours in English, speech, nutrition, or psychology do not need to enroll for the summer. The program is open to high school graduates who meet University admissions requirements. Applicants with college credits must have at least a C scholastic average.

The class is limited to 16 students selected on the basis of academic records and a personal interview. *High school or college courses in general biology and typing are prerequisites.*

In addition to tuition, housing, books, and other usual school expenses, the dental assisting program requires fees for clinic and laboratory, uniforms, instruments, dental supplies, class photograph, professional dues, professional pins, and transportation to and from clinical rotations off campus.

### APPLICATIONS PROCEDURE

1. Submit a formal application to The University of New Mexico, Office of Admissions and Records. If you are presently enrolled at UNM, it is not necessary to reapply to the University.
2. Complete a Dental Programs application form available from the Dental Programs office. An official high school transcript and college transcript, if you have attended college, must be submitted to the Dental Programs office and to the UNM Admissions and Records Office.
3. Students are encouraged to seek professional counseling early and should contact the Dental Programs at 277-4513 for an appointment.

*All of the admission requiremnts must be completed by May 1* in order for the applicant to be considered for the Dental Assisting Program. *You are encouraged to complete your application well in advance of the May 1 deadline.*

### CURRICULUM LEADING TO THE CERTIFICATE IN DENTAL ASSISTING

| Summer Session | |
|---|---|
| H Ec 125 | 3 |
| Sp Com 221 Interpersonal Communication | 3 |
| | 6 |

| First Semester | |
|---|---|
| DA 120 Basic Human Biology | 2 |
| DA 121L Dental Sciences | 3 |
| DA 131L Pre Clin Dental Assisting | 4 |
| DH 211L Tooth Morphology | 2 |
| DH 212L Oral Radiography | 3 |
| DA 230 Prin of Oral Med | 2 |
| | 16 |

| Second Semester | |
|---|---|
| Psych 101 Gen Psych 1 | 3 |
| Eng 100/101 Wrtgs w/Rdgs in Exp | 3 |
| DA 130 Preventive Dentistry | 1 |
| DA 132L Clin Dent Assisting | 2 |
| DA 134L Extramural Clin Assisting | 5 |
| DA 122L Adv Dent Sci | 4 |
| | 18 |

Students must complete the entire curriculum to qualify for a certificate. They graduate under the catalog requirements for the year in which they enroll.

If a student interrupts attendance in the program, graduation requirements must be completed within three years from the date of first registration. Students who interrupt attendance for more than one year must reapply for selection and follow the same procedures as a new applicant.

### REQUIREMENTS FOR THE CERTIFICATE IN DENTAL ASSISTING

1. Completion of all course work and maintaining an overall grade point of 2.0 combined for the three semesters.
2. Earn a grade of C or better in **all** professional courses. Professional courses begin with DA or DH.
3. Unanimous recommendation by the full-time faculty of the Dental Programs.

## Dental Hygiene

### PROGRAM FOR ASSOCIATE OF SCIENCE IN DENTAL HYGIENE

Dental hygienists are auxiliary personnel to the dental profession. Opportunities for hygienists are available in a variety of clinical settings which include private dental practice. Hygienists perform procedures such as oral prophylaxses, application of decay preventatives, exposure of dental x-rays and patient education.

Following a required two-semester preprofessional year in college, the Dental Hygiene Associate Degree Program is a four-semester curriculum which begins each year during the fall semester only. Facilities limit each class to no more than 24 students. In addition to tuition, housing, books, and other usual school expenses, the Dental Hygiene Program requires fees for instruments, dental supplies, clinic and laboratory uniforms, graduation fees, Student Dental Hygiene Association fees, professional pin and class photograph. Students will be charged a handpiece rental fee each year while enrolled in the professional curriculum. Students are responsible for transportation fees to and from clinical rotations off campus.

### Requirements for Admission

1. Admissibility to UNM.
2. Completion of all courses listed under the preprofessional curriculum with an overall grade- point average of 2.4 on a 4.0 point scale. All courses must be taken for a letter grade. Credit/No Credit grades are not acceptable.
3. Satisfactory completion of the Dental Hygiene Aptitude Test.
4. A personal interview with the Dental Programs Admission Committee.

### Preprofessional Curriculum

| First Semester | |
|---|---|
| Engl 100 or 101 | 3 |
| Biol 121L Prin of Biol | 4 |
| Chem 111L Gen | 4 |
| Psych 101 Gen or 102 | 3 |
| Soc 101 Intro to Soc | 3 |
| | 17 |

| Second Semester | |
|---|---|
| Engl 101 or 102 | 3 |
| Chem 212 Org and Biochem | 4 |
| Biol 136 Hum Anat & Physiol | 3 |
| Biol 139L Hum Anat & Physiol Lab | 1 |
| Sp Comm 221 Interpers Com | 3 |
| | 14 |

Preference is given to residents of New Mexico. Potential students who are past the age of most college students (returning students) are not handicapped by this factor and are encouraged to apply. Equal opportunity for admission is given to all applicants.

### Application Procedure

1. Apply to UNM. Application forms are available from the Office of Admissions and Records. Students already enrolled need not reapply to the University. Students transferring from another institution or those seeking readmission to The University of New Mexico must submit an application.
2. Dental Hygiene Aptitude Test scores must be submitted to the Dental Programs office. (This is a national test administered in January, April, and November.) Applications for the test are available from the Dental Programs Office.
3. Additionally, an applicant must complete a special Dental Programs application form which is available from the Dental Programs office.
4. To be considered for the program *the following must be sent to the Dental Programs by March 1:*
   a. Official copies of all transcripts
   b. Official current enrollment information
   c. Official results of the Dental Hygiene Aptitude Test
   d. Application

You are encouraged to complete your application well in advance of the March 1 deadline.

*All of the admissions requirements must be completed by March 1* in order to be considered for the Dental Hygiene Program. Credentials are screened in March. Applicants who successfully complete this portion of the application are then invited to meet with the Admission Committee for a personal interview. Those applicants who are provisionally selected will be notified in April. Applicants will be required to submit spring semester grades by June 15 and return completed medical and dental forms.

### Professional Curriculum

| FIRST YEAR<br>First Semester | |
|---|---|
| DH 201 Pre Clin DH Lect | 2 |
| DH 202L Pre Clin DH Lab | 2 |
| DH 210 Head and Neck Anat | 3 |
| DH 211L Tooth Morphology | 2 |
| DH 212L Oral Radiography | 3 |
| DH 230 Prin of Oral Med | 2 |
| DH 250 Histology | 2 |
| | 16 |

| Second Semester | |
|---|---|
| DH 203 Clin DH I Lect | 2 |
| DH 204L Clin DH I | 3 |
| H Ec 125 Nutrition | 3 |
| Biol 239 Microbiol | 4 |
| DH 240 Oral Path | 3 |
| Pharm 276 Prin of Pharm | 3 |
| | 18 |

| SECOND YEAR<br>First Semester | |
|---|---|
| DH 300 Clin DH II Lect | 2 |
| DH 301L Clin DH II | 3 |
| DH 320L Dent Materials | 2 |
| DH 322 Comm Dental Health | 3 |
| DH 370 Periodontics | 3 |
| Elective | 3 |
| | 16 |

| Second Semester | |
|---|---|
| DH 302 Clin DH III Lect | 2 |
| DH 303L Clin DH III | 4 |
| DH 340 Field Experiences | 1 |
| DH 342 Ethics, Juris, and Prac Mgmt | 2 |
| DH 344 Spec Topics in DH | 2 |
| DH 352 Adv Dental Procedures | 3 |
| | 14 |

All courses in the professional curriculum must be taken fo a letter grade. Credits in physical education activity course will be limited to two in fullfillment of elective credits.

Students graduate under the catalog requirements of th year in which they enroll, provided they complete gradua

tion requirements within a continuous three-year period. Students who interrupt attendance and are absent from the program one or more years must reapply and follow the same procedures as a new applicant.

**Requirements for the Associate of Science Degree**

1. Completion of all course work required, maintaining an overall grade point of 2.0 or above.
2. Earn grades of C or better in all courses in the four semesters of the required curriculum.
3. Unanimous recommendation by the full-time faculty of the Dental Programs.

Students who complete the associate degree are eligible to take the National Board Examination in Dental Hygiene.

**PROGRAM FOR THE BACHELOR OF SCIENCE IN DENTAL HYGIENE**

*Note: The bachelor of science degree program is undergoing curriculum and policy changes. Contact Dental Programs for further information.*

This program is available to selected students who have received an Associate Degree or a Certificate in Dental Hygiene from a school accredited by the American Dental Association. Applicants for admission to the bachelor's degree program must meet these requirments:

1. Admissibility to The University of New Mexico as described in the Admissions and Registration section of this catalog.
2. Written letter of intent to the Director of the Dental Programs.
3. A 2.5 grade-point average from the dental hygiene associate degree or certificate program.
4. Clinical demonstration of the skills currently taught by The University of New Mexico Dental Programs.
5. Records of medical and dental examination within the past three months.
6. Letters of recommendation from all employers from the time of receiving the dental hygiene certificate or degree to the present.
7. Completion of standardized tests as required by the Dental Programs.

All elective courses must be completed by the time the student completes the second semester of intern teaching. Credits in physical education activity courses will be limited to two as fulfillment of elective credits. Only intern teaching courses are accepted for CR/NC; all other courses must be taken for a letter grade.

Students graduate under the catalog requirements of the year in which they enroll for the first time as baccalaureate degree candidates provided they complete graduation requirements within a continuous three-year period. Students who interrupt attendance and are absent from the program for one or more years must reapply and follow the same procedures as a new applicant.

*All of the above requirements must be completed by March 1 for entrance to the fall semester, November 1 for entrance to the spring semester.*

**REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE**

1. Completion of 132 semester hours as required in the curriculum.
2. At least a 2.0 scholastic index in all hours attempted at The University of New Mexico and a 2.4 average in all dental hygiene courses.
3. Written application for graduation to be submitted during the semester prior to expected graduation date. This is to be submitted to the Dental Programs office.
4. Unanimous recommendation by the full-time faculty of the Dental Programs.

**Curriculum leading to the Bachelor of Science in Dental Hygiene**

(Descriptions of the courses offered will be found, listed by departments, in the Courses of Instruction section of this catalog.)

First and second-year requirements are fulfilled by completion of an associate degree or certificate program in dental hygiene at an accredited two-year school.

Changes in the curriculum are anticipated. For details of the curriculum contact Dental Programs.

All required courses must be completed prior to enrolling for internship.

# OTHER DIVISIONS OF THE UNIVERSITY

## Division of Public Administration

The Division offers an interdisciplinary Master of Arts in Public Administration for the professional preparation of men and women presently employed or interested in public service careers at all levels of government. The curriculum is also offered through the Santa Fe Graduate Center.

The Division offers concentration areas for persons interested in energy management, public health administration, budget-financial management, Indian tribal management, and public science policy. It is not necessary to choose a concentration, and many students select a general program. A joint degree program with the School of Law enables students to earn both a law degree and the MAPA on a coordinated basis.

For description of courses offered in public administration, see the Courses of Instruction section of this catalog. For curriculum see the Graduate Programs Bulletin.

## Division of Continuing Education and Community Services

The Division of Continuing Education and Community Services is a separate unit of The University of New Mexico, responsible for conducting instruction by independent study, extension classes, and non-credit courses for adults. The Division also supervises the programs of all students enrolled in the University for non-degree work. For additional information see section on non-degree status under the Admission and Registration section of this catalog.

**CREDIT PROGRAMS**

*EXTENSION CLASSES.* Any of the regular University courses may be offered by extension provided there is a large enough group in any one center to justify doing so and as long as the class is not dependent upon the campus library and laboratory facilities. Persons interested in having an extension class offered in a specific community should address their inquiries to the Dean, Division of Continuing Education and Community Services, The University of New Mexico, Albuquerque, New Mexico 87131.

*RESIDENT EXTENSION.* Any of the regular University courses may, subject to appropriate approval, be offered for resident credit in Bernalillo County. Persons interested in offering a course for resident credit should contact the Dean, Division of Continuing Education and Community Services, The University of New Mexico, Albuquerque, New Mexico 87131.

*INDEPENDENT STUDY COURSES.* A number of regular undergraduate courses are available by correspondence. The courses are developed and graded by qualified University personnel. Credit from these courses may be applied toward an undergraduate degree to the extent of 30 semester hours, subject to the approval of the dean of the college in which the student is enrolled (see 'General Academic Regulation').

The bulletin listing Independent Study courses is available through the Dean of Continuing Education and Community Services.

**NON-CREDIT PROGRAMS.**

*THE COMMUNITY COLLEGE.* Through the Community College the Division offers a variety of non-credit courses designed for men and women interested in learning in an informal and non-competitive environment. Registration is open to all adults (18 years and older) regardless of educational background. In some cases, classes are open to younger persons. In all but a few courses, there are no examinations, transcripts, credit or grades, although certificates of completion are issued upon request.

The catalog listing non-credit courses offered each semester may be obtained from the Division of Continuing Education and Community Services, The University of New Mexico, Albuquerque, New Mexico 87131.

*CONFERENCES, INSTITUTES AND SPECIAL RELATED COURSES.* All conferences, institutes and special related courses connected with The University of New Mexico are coordinated through the Division of Continuing Education and Community Services. Groups interested in Division services should contact the Dean of the Division of Continuing Education and Community Services, The University of New Mexico, Albuquerque, New Mexico 87131.

**College Preparatory Program**

The College Preparatory Program was designed by the Division of Continuing Education to assist students who have been denied admission to UNM because of academic and/or subject matter deficiencies, or to anyone (18 years and older), regardless of educational background, who wishes to improve or review their academic skills. Core courses in English, Mathematics, Natural Science and Social Science, along with supplementary developmental courses are offered.

The catalog listing College Preparatory courses offered each semester may be obtained from the Division of Continuing Education and Community Services, The University of New Mexico, Albuquerque, New Mexico 87131.

**University Facilities**

Any scheduling of space, other than for the intended purpose or normal use, in Johnson Gym and other facilities not specifically scheduled by another entity of the University must be done by the Dean of Continuing Education and Community Services or his designee.

**OFF-CAMPUS BRANCH COLLEGES AND RESIDENCE CENTERS**

The University of New Mexico has as its primary responsibility the task of serving the citizens of the State by offering opportunities for higher education. It has generally been the policy of the University to provide these opportunities on the main campus, with supplementary programs in extension and independent study. In addition to these programs, the University has one branch college, two residence centers, and a sattelite center.

Credits earned by students while attending a branch college of The University of New Mexico are transferable to appropriate schools and colleges on the main campus of the University. Credits are also transferable to other colleges and universities in New Mexico and surrounding states on the same basis as credit earned on the main campus. Students enrolling at the branches should contact a representative from the college of their choice to determine which courses are applicable toward the degree desired.

All communications regarding entrance to the branches should be addressed to the appropriate center.

**The Gallup Branch.** Opening on September 16, 1968 with offices and classrooms in Gallup High School, The University of New Mexico Gallup Campus has grown into an impressive college sitting on over 80 acres of pinon-wooded hills. The campus currently consists of Lions Community Services Center, Gurley Library Instructional Center, the Career Education Building, Calvin O. Hall College Center, and a Physical Education Complex.

The college offers fully accredited academic courses transferable not only to The Univesity of New mexico, but also to other institutions. In addition, the Gallup Campus offers a terminal Associate of Arts degree in several fields including Nursing, Law Enforcement, Community Service Work, Elementary Education, Recreation, and Arts and Sciences.

In 1979 the college introduced a program of Vocational Education with course offerings in Auto Mechanics, Welding and Office Occupations. Programs in Building Construction and Diesel Mechanics are currently being developed and will be offered in Fall '81.

In addition to its degree programs, the Gallup Campus offers many non-credit short-term courses and workshops through its Community Education Division. Interested community members can choose from a wide variety of course subjects including Navajo, home improvements, cake decorating and horsemanship.

**Valencia County-Branch.** The University of New Mexico-Valencia County Branch was established in the summer of 1981. The Branch replaces and expands UNM's Eastern Valencia County Satellite Center of 1978 and Eastern Valencia County Resident Center of 1979.

The Branch offers daytime, late afternoon and evening classes in academic, technical/vocational, and community service programs to recent high school graduates and working adults in the Valencia County area. Approved transfer credits earned at the Branch may be transferred to UNM or some other college or university and applied toward a baccalaureate degree. In addition, several programs leading to associate degrees and certificates for both full-time and part-time students are available. The Branch also provides instruction leading to the Graduate Equivalency Diploma (GED).

At present the Branch occupies 20,000 square feet of laboratory, shop and administrative space in the Rio Communities Shopping Center east of Belen. Over 100 acres of land have been donated on which to build a permanent facility.

Information regarding enrollment at the Branch may be obtained from the director of the Branch or from the Office of the Associate Provost for Community Education.

**The Los Alamos Branch Campus.** The University of New Mexico-Los Alamos Branch Campus began offering freshman and sophomore level courses in August, 1980. Its programs are summarized in its Mission Statement, which reads:

> The University of New Mexico-Los Alamos is committed to providing the highest quality education for its students. Drawing upon its greatest asset, the human and physical resources of Los Alamos, its programs shall be threefold:
>
> 1. Two-year academic transfer programs
> 2. A wide ranging program of community education responsive to the needs of the region.
> 3. Associate degree programs with emphasis on those technical areas that have a nationally demonstrated demand and that use the distinctive Los Alamos expertise
>
> The University of New Mexico-Los Alamos is committed to providing these programs to all students of the region, and it pledges itself to provide the services, including developmental, necessary to help these students achieve their goals.
>
> Furthermore, The University of New Mexico-Los Alamos will seek active cooperation with all neighboring educational programs and institutions, confident that such cooperation is in the best interest of the student and region.

Associate Degrees in Laser Technology and Instrumentation Engineering Technology are offered as is a variety of general education courses. The Los Alamos Branch relies entirely upon part-time faculty recruited from the Los Alamos area, and presently occupies facilities in the former Mesa School, which is located across Diamond Drive from the Los Alamos High School.

**The Los Alamos Graduate Center.** The University of New Mexico and the Los Alamos Scientific Laboratory (LASL), operated by the University of California (Berkeley), cooperate in the advanced training of graduate students specializing in chemistry, engineering, mathematics, and physics. Under these arrangements, it is possible for properly qualified doctoral candidates to carry on research for their dissertation. Acceptance of students for research at Los Alamos is subject to certain conditions specified by the Laboratory. Further information concerning work offered may be obtained by writing to the Director at Los Alamos or to the chairperson of the department concerned at the University.

**Santa Fe Graduate Center.** The University offers graduate courses in Santa Fe through the Santa Fe Graduate Center. Refer to the Graduate Programs Bulletin for details.

## Computing Center

The Computing Center provides general purpose computing facilities to meet the academic and administrative needs o the University of New Mexico. Services are provided also t government agencies and other educational institutions.

A recently installed IBM 3032 computer running under th MVS operating system provides powerful batch and inter active services. An extensive range of standard softwar products, utilities and applications are available. Other in stalled equipment includes two DEC 11/70 computers, on of which runs under the UNIX operating system.

The Center's User Services group provides assistance an support to users in applying the capabilities of the compute systems to meet their particular needs. This support grou concentrates on maintaining open channels of communica tion, resolving user's problems and providing training an consulting services to the user community.

Full systems analysis and programming services are avai able from the Center on a billable basis.

For more information on computer services at the Unive sity, please contact User Services at (505) 277-2211.

# Military Training

### Air Force ROTC

The aerospace studies curriculum is designed to give the participating student an understanding of the military instrument of national power with emphasis on the United States Air Force and how it fits into the spectrum of power. Inherent in course content and methodology are opportunities for students to develop their capacities to think creatively, to speak and write effectively, and to lead and manage efficiently.

The Air Force ROTC commissioning program is open to qualified students in all academic majors. The program is divided into a general military course (GMC) and a professional officer course (POC). The latter is the final commissioning phase for those students who qualify and desire a commission in the USAF. Both the GMC and POC require one hour of noncredit leadership laboratory. Students qualified for flying training receive flight instruction in civilian aircraft during their senior year. (A total of 25 hours of flight instruction is offered.) Students must pass the FAA private pilot written exam and a basic flying proficiency evaluation to sucessfully complete the course (402).

*FOUR-YEAR OPTION.* A qualified incoming freshman, male or female, may enroll in aerospace studies classes following normal college registration procedures. The student enrolls in the general military course (GMC) for the first two years. Prior to enrolling in the last two years of the program, the professional officer course (POC), student must meet Air Force ROTC qualification standards and requirements. All Air Force ROTC participants must complete a summer four-week field training course prior to entering POC, normally between the sophomore and junior year.

*TWO-YEAR OPTION.* The basic requirements for entry into this program is that the student have two academic years remaining. Entry into the professional officer course (POC) is on a competitive basis. Applicants must meet Air Force ROTC qualification standards and requirements. Prior to entering the POC program, students must attend and successfully complete a six-week field training course.

Uniforms and textbooks for both the GMC and POC Air Force ROTC courses are provided by the Air Force. Participants receive approximately $700 for the six-week summer training period and $500 for the four-week summer training period (in addition to ten cents per mile travel pay or an airline ticket) and $100 per month for 20 months. Additionally, students who qualify may receive an AFROTC scholarship which will pay full tuition, laboratory fees, and books, plus $100 per month subsistence throughout the academic period that the scholarship is in effect. Scholarships are available for four-, three-, and two-year periods.

This department is administered by personnel of the United States Air Force under rules promulgated by the Department of the Air Force and The University of New Mexico .

The mission of the Air Force ROTC education program is to provide preprofessional preparation for future Air Force officers. It is designed to develop selected men and women who can apply their AFROTC education to their initial active duty assignments as Air Force commissioned officers.

Students may enter the Air Force ROTC from any high school, college, or university. Transfer students with an ROTC background can receive credit for previous ROTC experience.

Processing of new students for the four-year program is accomplished during registration for the fall semester. New students for the two-year program can process at any time during their sophomore year. Specifics may be obtained by contacting the Air Force ROTC staff members at 1901 Las Vegas NE. An $8 activity fee will be solicited at the beginning of each semester. This fee makes up an activity fund which is administered by the cadets.

**Department of Aerospace Studies.** THE GENERAL MILITARY COURSE (GMC) (four-year program only). The GMC is an introduction to U.S. military forces and the development of air power designed to prepare cadets for entry into the POC. The standard GMC is a two-year course in aerospace studies. The first year is designated AS 150 and the second year AS 200. It is normally offered to freshmen and sophomores. The GMC totals approximately 120 hours, consisting of 60 hours of academics and 60 hours of leadership laboratory.

THE PROFESSIONAL OFFICER COURSE (POC) (two- and four-year programs). The POC subject matter includes the development and use of aerospace power, theoretical and applied leadership, and management and communications skills to prepare cadets for active duty as commissioned officers. It is a two-year course of instruction in aerospace studies and is normally designated AS 300 for juniors and AS 400 for seniors. The POC totals approximately 240 hours, i.e., 120 per year consisting of 90 hours of academics and 30 hours of leadership laboratory. The POC is available for qualified students who have successfully completed Air Force, Army, or Navy basic ROTC programs, armed forces veterans with six months or more active service, and undergraduate or graduate students with two or more academic years remaining.

LEADERSHIP LABORATORY. Leadership laboratory provides a variety of practical leadership experiences for the cadets by rotating positions and task responsibilities among cadets. These experiences take place within the cadet squadron, led and managed by cadets.

**Department of Aerospace Studies**

| | |
|---|---|
| FIRST YEAR | |
| | First Semester |
| AF ASP 150 The Air Force Today | 1 |
| Second Semester | |
| AF ASP 151 The Air Force Today | 1 |
| SECOND YEAR | |
| First Semester | |
| AF ASP 200 Dev of Air Power | 1 |
| Second Semester | |
| AF ASP 210 Dev of Air Power | 1 |
| THIRD YEAR | |
| First Semester | |
| AF ASP 300 Air Force Mgmt Ldrshp | 3 |
| Second Semester | |
| AF ASP 301 Air Force Mgmt Ldrshp | 3 |
| FOURTH YEAR | |
| First Semester | |
| AF ASP 400 Natl Sec Forces in Contemp Amer Soc | 3 |
| AF ASP 402 Flight Inst Program | 3 |
| Second Semester | |
| AF ASP 401 Natl Sec Forces in Contemp Amer Soc | 3 |

### Naval ROTC

The NROTC program provides a means whereby the student can be financially assisted toward attainment of an undergraduate degree through the four-year scholarship program, the two-year scholarship program, the four-year college program, or the two-year college program. All four programs lead to service as a commissioned officer in the Navy or Marine Corps.

Applications for the NROTC four-year scholarship program must be made to the Navy by December 1 for entry into the program the following August. Applicants first compete nationally on the basis of ACT or SAT scores; subsequent selection heavily weighs on the applicant's academic performance in high school and college. Applications for the NROTC two-year scholarship program must be made to the Navy by March 15 for entry into the program the following June. Applicants must be college sophomores and selection is based on the student's college academic performance.

Applications for the four-year NROTC college program may be made to the NROTC Unit UNM at any time. Applications for the two-year NROTC college program may be made to the NROTC Unit UNM during the fall semester of the sophomore year or during the first month of the spring semester of the sophomore year. Applicants are selected by the Navy on the basis of demonstrated academic performance and expressed motivation.

Students in the NROTC scholarship program recieve tuition and scholastic fees, textbooks, uniforms, and $100 per month for the entire time they are in the program. Students in the NROTC college program receive naval science textbooks and uniforms for the entire time they are in the program and $100 per month subsistence allowance during their junior and senior years.

Further information concerning the program may be obtained from high school and college counselors, recruiting stations, and the NROTC Unit, UNM, 720 Yale Blvd. NE, Albuquerque, New Mexico 87131, telephone (505) 277-3744.

**Department of Naval Science.** Students in the NROTC scholarship program are encouraged to pursue majors in the engineering and hard science (mathematics, chemistry, and physics) fields of study to meet the technological requirements of the Navy. Other fields of study are permitted with the approval of the Professor of Naval Science.

There are no restrictions placed upon college program students or Marine option students as to academic majors.

Completion of the naval science requirements can constitute completion of a minor in the College of Arts and Sciences.

**Department of Naval Science**

| | |
|---|---|
| FIRST YEAR | |
| First Semester | |
| Nav Sc 100 Prin and Con of Naval Sci | 1 |
| Second Semester | |
| Nav Sc 105 Naval Ships Sys I | 3 |
| SECOND YEAR | |
| First Semester | |
| Nav Sc 201 Naval Ships Sys II | 3 |
| Second Semester | |
| Three-hour elective | 3 |
| THIRD YEAR | |
| First Semester | |
| Nav Sc 303 Navigation and Naval Operations | 3 |
| Second Semester | |
| Nav Sc 304 Navigation and Naval Operations | 3 |
| FOURTH YEAR | |
| First Semester | |
| Nav Sc 407 Principles of Naval Leadership and Management | 3 |
| Second Semester | |
| Three-hour elective | 3 |

Marine Corps subjects, given below, are substituted by Marine Corps applicants during the junior and senior years:

| | |
|---|---|
| THIRD YEAR | |
| First Semester | |
| Nav Sc 331 Evolution of Warfare | 3 |
| Second Semester | |
| Three-hour elective | 3 |
| FOURTH YEAR | |
| First Semester | |
| Nav Sc 431 Amphibious Warfare | 3 |
| Second Semester | |
| Three-hour elective | 3 |

All NROTC students attend two hours of naval science drill/laboratory per week in the appropriate section of Nav Sci 010 Naval Professional Laboratory.

In addition to the above, NROTC students must take certain additional courses. Information concerning additional course work can be obtained at the Department of Naval Science.

# COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES, under the respective department and division headings, are listed the courses offered for residence credit by the University as well as requirements for major and minor studies in the various department.

Courses are numbered from 001 through 799. Courses from 001 to 099 may or may not carry credit but are not applicable toward a bacculaureate degree. The number 100 is reserved for courses designed to develop university skills for students whose preparation has been inadequate in the fields of English, mathematics, and reading comprehension. The courses numbered from 101-199, lower division, are normally open to freshman; from 200 to 299, lower division, normally open to sophomores; from 300 to 499, upper division, normally open to juniors, seniors, fifth-year undergraduates, and graduates; 500 to 799, graduate and professional, normally open to students enrolled in a graduate program only, the School of Law, or the School of Medicine. **See Graduate Program Bulletin for description of courses numbered 500 and above.**

Symbols used in course descriptions:

- * —course allowed for graduate credit to student enrolled in a graduate program. Normally, a graduate student enrolled in a starred course numbered below 500 is required to do extra work in the course.
- ** —available for graduate credit except for graduate majors in the department.
- † —may be repeated for credit with permission of department chairperson (or dean).
- †† —may be repeated for credit with permission of department chairperson (or dean) and instructor.
- ‡ —may be repeated for credit because subject matter varies.
- ‡‡ —(used by departments as footnote for repetition qualification not covered by three footnotes immediately above.)
- L —part of the course is laboratory work; hours of lecture and laboratory are given at end of description.
- F —course is given in field session.
- () —semester hours' credit; credit hours separated by a hyphen (1-3) indicates variable credit in the course.
- [] —Former courses number or title.
- {} —session in which course is expected to be offered (except for law and medicine, where registration is conducted by the School). Session indicated for the year courses (such as 301-302) refers to both semesters unless otherwise stated. Courses such as 551,552,599,699 will be offered every session; no indication will be given unless it differs. Session offered for other courses not indicating this information must be obtained from department chairperson.

When a prerequisite course number is not preceded by a department designation, reference is to the department under which the prerequisite statement appears.

A schedule of course offerings, including hours of meeting, is issued at the opening of each session. **The University reserves the right to cancel any listed course or to make a substitution in instructors when necessary.**

# AEROSPACE STUDIES

Don R. Richard, Lt, Col., Commanding Officer
Aerospace Studies Building, 277-4502

**PROFESSORS:**
Don R. Richard, Lt Col, USAF,MBA, University of Colorado
William C. Curtis, Major, USAF, MS, University of North Dakota
Jerry B. Trice, Captain, USAF, MA, University of Oklahoma

**CURRICULUM**

**010L. Leadership Laboratory. (0)**
Meets weekly for one hour. Provides students with progressively challenging leadership and management experiences within the cadet corps, designed to develop each student's potential for assuming the reponsibilities of an Air Force officer. Enrollment in the laboratory is required.

**150-151. The Air Force Today. (1, 1)**
Deals with the Air Force in the contemporary world through a study of the total force structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces. {150—Fall, 151—Spring}

**200-201. Development of Air Power. (1, 1)**
The study of the development of air power from balloons and dirigibles through the peaceful employment of U.S. air power in relief missions and civic action programs in the 1970s and also the war in Southeast Asia. {200—Fall, 201—Spring}

**300-301. Air Force Management Leadership. (3, 3)**
Emphasizes the individual as a manager in an Air Force milieu. The individual motivational and behavioral processes, leadership, communication, and group dynamics are covered to provide a foundation for the development of the junior officer's professional skills as an Air Force officer. {300—Fall, 301—Spring}

**400-401. National Security Forces in Contemporary American Society. (3, 3)**
A full year course conceptually focused on the Armed Forces as an integral element of society, with an emphasis on the environmental context in which U.S. defense policy is formulated and implemented. {400—Fall, 401—Spring}

**402. Flight Instruction Program. (3)**
Principles of flight, federal aviation regulations, weight and balance, preflight inspection, aviation weather, navigation, radio communication, emergency procedures, 25 hours airborne instruction. Students must pass the F.A.A. private pilot written exam and a basic flying proficiency evaluation to sucessfully complete the program.
Prerequisite: qualified AFROTC senior students. {Fall}

# AFRO-AMERICAN STUDIES

Director (Academic)
1819 Roma NE, 277-5644
Johanna (Juba) Clayton, Director, Student Services
1819 Roma NE, 277-5644

**FACULTY**
Farida Khan Dougherty, M. A., University of New Mexico
Cynthia Hamilton, Ph.D., Boston University
Raymond Hamilton, J.D., Harvard University
Iola Harding, Ph.D., University of New Mexico
Robert Harding, J.D., University of Kentucky
Lenton Malry, Ph.D., University of New Mexico
Elwood McDowell, Rev., M.A., University of New Mexico
Gustav Ntiforo, Ph.D., University of New Mexico
Shiame Okunor, M.P.A., University of New Mexico
Fondo Sikod, M.B.A., University of New Mexico
Cortez Williams, Ph.D., University of New Mexico

The Afro-American Studies is an interdisciplinary academic unit offering courses to the University community. Some of the courses are cross-listed with academic departments.

The diversified course schedule is complimented by the program sponsorship of the following university/community projects: Afro-American Studies Resource Library, The After School Academy, Youth Summer Program, Student Emergency Loan Fund, and The Black Experience Television Program.

The Student Service division of the Afro-American Studies program provides academic and course counseling and advisement. Financial aid, grants, loans, admission assistance, free tutorial and typing services, and academic scholarship information.

**CURRICULUM**

**101. Swahili I. (3)** Khan
Foundation course for all beginning students interested in reading or speaking the language.

**102. Swahili II. (3)** Khan
Foundation course for all beginning students interested in reading or speaking the language.

**103. Foundation of Afro-American Studies. (3)** Okunor
An exploration of the philosophical basis for the creation and the existence of Afro-American Studies program.

**240. Music of Black Americans 16th to 19th Century. (3)**
The study of the History, forms and functions of music and its practices among Afro-Americans. (1600 to Mid 1800.)

**250. Black Women. (3)**
A comprehensive survey of the role that the Black woman has played the society of the United States. Emphasis will be placed on achievements and contributions. {Fall}

**280. African Literature. (3)**
An analytical look at the works of major African writers and their usage of African symbols to portray Africa of the past, present and the future.

**284. Afro-American History I. (3)** I. Harding
A comprehensive survey of the story of Afro-Americans from pre-European days in Africa to the Dynamic 1960's.

**285. Blacks in Latin America I. (3)** Williams
A comprehensive analysis of the plight of Black people in Latin America as compared with their experiences in North America, from the 15th to 19th century.

**290. Black Theology and Philosophy. (3)** McDowell
Introduction to some traditional western theological and philosophical schools of thought as a basis for intensive examination of the works of prominent Black Theologians and Philosphers.

**295. Education and Colonial West Africa. (3)** Okunor
A study of European Education and its psychological, sociological and cultural impact of traditional African society.

**299. Black Leaders in the U.S. (3)** R. Harding
A comparative study of major Black leaders and their impact on race relations in the United States. {Spring}

**301. Institutional Racism. (3)** Hamilton
A study of the pervasive nature and the broad effects o race-influenced institutional decisions; the differences in the legal definition of institutional and individual racism.

**309. Blacks in Politics. (3)** Malry
A study of the History and diverse educational and politica maturation processes of elected Black officials and the po litical process function.

**325. Afro-American History II. (3)** Harding
This course will explore each of the major historical periods Black leaders of those times and their influence on th social and political advancement of Afro-American fror Emancipation through the Civil Rights era.
Prerequisite: Afro-Am. Studies 284 {Spring}

**391. Problems (1-3)**

# AMERICAN STUDIES

Sam B. Girgus, Chairperson
Humanities Building 320, 277-3929

**PROFESSORS:**

Sam B. Girgus, Ph.D., University of New Mexico
Hamlin Hill, Ph.D. University of Chicago

**ASSOCIATE PROFESSOR:**

Joel M. Jones, Ph.D. University of New Mexico

**ASSISTANT PROFESSORS:**

Helen M. Bannan, Ph.D., Syracuse University
Charles D. Biebel, Ph.D., University of Wisconsin-Madison.

**THE AMERICAN STUDIES COMMITTEE:**

George W. Arms, Ph.D. (English)
Ernest W. Baughman, Ph.D. (English)
Sanford Cohen, Ph.D. (Economics)
Douglas George, M.A. (Art)
Ira Jaffe, Ph.D. (Theatre Arts)
Howard Rabinowitz, Ph.D. (History)
Harold V. Rhodes, Ph. D. (Political Science)
Daniel M. Slate, Ph.D. (Management)
M. Jane Slaughter, Ph.D (History)
Anne P. Taylor, Ph.D. (Art Education and Architecture)
M. Marta Weigle, Ph.D. (English and Anthropology)
Peter White, Ph.D. (English)

**MAJOR STUDY**

The major in American Studies is designed for the student interested in the interdisciplinary study of American culture and character. It encourages flexibility and innovation within a general structure of areas of study and investigation. The student will work closely with his or her undergraduate adviser in putting together the major and must receive the adviser's approval and the chairperson's approval for all course work related to the major. Nine hours of courses in American Studies may overlap with Arts and Sciences group requirements.

A. Introductory courses (Am St 285 or equivalent) 3

B. Interdepartmental Studies of American Culture: after consultation with faculty adviser choose 30 hours of courses numbered 200 and above from five to the areas below, with no more than 12 hours in any one area and at least 15 hours of courses numbered 300 and above. Six hours of courses in American Studies at the 200 level may be used in the appropriate subject area below.
   - History
   - Literature
   - Political, economic and geographic studies
   - Social and cultural systems (Soc, Anth, Psych)
   - Humanities and communication (Phil, Ling, Fine Arts, Comp Lit, Journ; Sp Comm) 30

C. Specialization: students are encouraged to minor or have a second major in a discipline that can be used as a tool for the study of American culture (18-26 hours or more in another department).

D. Advanced Senior Program and Thesis: after consultation with faculty adviser, choose (courses numbered 300 and above):
   1. 12 interdepartmental hours in courses centering around a particular topic or problem in American culture, such as The Chicano Experience, Women in the Pluralism, The United States and Other Cultures 12
   2. American Studies Seminar and Thesis (485) 3

   Total Hours 48

**MINOR STUDY**

An American Studies minor may be elected by undergraduate students majoring in the departments of anthropology, art history and criticism, economics, English, history, philosophy, political science, or sociology. People having other majors will need the special approval of both their major adviser and the American Studies office. Requirements for the doctoral degree in American Studies are listed in the Graduate Programs Bulletin.

The minor in American Studies is designed to introduce students to the interdisciplinary study of the culture of the United States. The requirement is 24 hours, including 12 hours in American Studies: 285, 6 hours at the 300 level, and 485 Prospective minors will usually begin their programs with an introductory course chosen from 201-241. Students will take the remaining 12 hours in an integrated program chosen from other departments (anthropology, art history and criticism, economics, English, geography, history, political science, philosophy, psychology, or sociology) or American Studies courses. With proper selection of courses a student may elect a minor in American Studies with an emphasis in Afro-American, Chicano, Native American, or Women Studies. A student may choose to focus his or her minor program on another important theme in American culture, such as the popular arts, the artist or ecology in America, or may emphasize the interdisciplinary study of a region or the nation as a whole. All students should consult with their major adviser and the American Studies minor adviser as early as possible to obtain approval of their minor program.

**MASTER OF ARTS**

The professional degree for the inter-disciplinary study of American culture and character. Depending on the student, the degree can either be terminal or lead to further study.

**CURRICULUM**

**100. Social Science (3)**
An introduction to the Social Science disciplines. Emphasis on intensive skills improvement in communications, reading comprehension, study techniques and logical reasoning which are required for further study in any of the Social Science disciplines. Course themes may vary by department, but all courses will be interdisciplinary and will emphasize skills. For students who score 13 or below in Social Science on the ACT or who are admitted with a Social Science deficiency.

**185. American Life and Thought I. (1, 2, 3)**
An interdisciplinary investigation of American culture and character focusing on the use of the humanities for understanding important themes in American life.

**186. American Life and Thought II. (1, 2, 3)**
An examination of selected social institutions using interdisciplinary resources drawn both from the social sciences and the humanities.

**201. European Immigrant Experience in the United States. (3)** Bannan
Discussion of expectations, immigration, and acculturation of European immigrant groups with special attention given to the problem of diversity, assimilation and homogeneity. {Fall, Spring}

**211. The Black Experience in the United States. (3)** Staff
An analysis of the political, economic, religious, and familial organization of Black communities in the United States. {Spring}

**221. Southwest Indian Communities. (3)** Staff
An examination of the world view and lifestyles or reservation indians in an area of unusually high cultural integrity. {Fall}

**231. Women's Experience in the United States. (3)‡** Staff
An analysis of the contributions and problems of women in the United States. Titles of individual sections will vary as content varies. May be repeated for credit. {Fall, Spring}

**241. The Chicano Experience in the United States. (3)** Staff
Investigation of the historical and social conditions that have shaped the development of Chicano life. {Fall, Spring}

**285. American Life and Thought III.** [American Life and Thought.]**(3)**
Examination of the development of American cultural values and attitudes from the seventeenth to the early twentieth centuries. The course will demonstrate the use of interdisciplinary modes of inquiry. {Fall, Spring}

**286. American Life and Thought IV.** [American Life and Thought II.]**(3)**
This course focuses on American cultural institutions particularly in the twentieth centruy which have helped to shape and define current notions of American character and the American dream.

**301-302. Interdepartmental Studies in the Culture of the United States. (1-3, 1-3)‡**
Subjects, varying from semester to semester, will be topical in 301 (as "Present Predicaments" and "Politics of the Transcendentalist") and chronological in 302 (as "Historical Crises of the 20th Century" and "Academia in the Novel"). **May be repeated for credit as subject matter varies, with permission of American Studies undergraduate adviser or of the chairperson of the student's major department.** {Summer, Fall, Spring}

**304. Ecology in American Thought. (3)** Jones
A study of cultural attitudes and values toward urban development, nature, wilderness and the environment. {Fall, Spring}

**305. The Myth of America. [The American Dream.] (3)** Bannan
This course will analyze the meanings and dimensions of the myth of America as it appears in American literature and thought. It will also consider when possible the form of the myth in the visual arts and mass media. {Fall}

**306. The Frontier in American Thought. (3)** Bannan
An interdisciplinary study of the impact of the frontier experience upon American culture, emphasizing how literary, historical, and artistic interpretations reflect or challenge prevailing myths of the West. {Spring}

**308. The Jewish Experience in American Literature and Culture.** [The Jewish Experience in the United States.]**(3)** Girgus
(Also offered as English 308.) A comprehensive survey of the cultural and historic relationship between Jews and American culture and character as a whole.

**311. Institutional Racism. (3)** Staff
An analysis of the effect of institutionalized racism on the Black community. Emphasis will be placed on education, economics, political and social forces which affect Black America. {Fall}

**312. The Black Woman. (3)** Staff
A comprehensive survey of the role that the Black woman has played in the society of the United States. Emphasis will be placed on achievements and contributions. {Fall}

**313. The Black Community. (3)** Staff
An in-depth analysis of the racial, economic, educational, and historical make-up of the Black community and the effects society has on this community structure. {Fall}

**321. Indian in a Multicultural Setting. (3)** Staff
Political issues and problems of Native Americans on reservations and in urban areas. Topical review of Indian/White contacts, including Indian society's adaptation to contemporary social conditions and contemporary thinking. {Spring}

**322. Five Civilized Tribes. (3)** Staff
Survey of the history and cultures of the Five Civilized Tribes (Cherokee, Chickasaw, Choctaw, Creek, and Seminole). Course deals in three categories: understanding of the early history of the tribes prior to the Indian Removal Bill of 1830; the Indian Removal Era; and the Commission's actions following 1887. {Fall}

**326. The Indian in American Popular Culture. (3)** Staff
Analyzes roles assigned to Indians in American culture. Studies literature of Colonial and Romantic periods as well as modern books, photography, art, movies, television, and industry. {Spring}

**331. Classics of Feminism in the United States. (3)** Staff
Reading and criticism of classics of feminism in the United States. Particular emphasis is placed on the relationships between theoretical and autobiographical works and on their interaction with social, political, and religious movements. {Fall, Spring}

**332. Immigrant Women. (3)** Bannan
An interdisciplinary study of the experience of immigrant women and their ethnic descendants of various nationalities, emphasizing their changing roles and value conflicts in the acculturation process. {Spring}

**341. History of Conflict in New Mexico. (3)** Duran
Examination of selected examples of imposition of Anglo-American economic, political, and social institutions on Chicanos and their consequences. {Fall, Spring}

**342. La Mujer Chicana. (3)** Staff
Exploration of the role of the Chicana in contemporary society (the family, the church, rural vs. urban experience, etc.) and of the historical relationship of the Chicana to the Chicano Movement and the Feminist Movement. {Fall, Spring}

**350. Popular Culture in American. (3)** Girgus
Analyzes the implications for democracy and democratic institutions of the rise of mass society and popular culture. Draws from both traditional and popular culture sources for reading material and subject matter. {Fall}

**351. Popular Arts in America. (3)** Biebel, Girgus
The study of popular arts and media as both expressions of and forces influencing American culture, character, values, and beliefs. {Spring}

**352. America on Film. (3)** Girgus
Reflections and reconstructions of American culture, values and attitudes as seen in major Hollywood movies. {Fall, Spring}

**360. Albuquerque in Cultural Context. (3)** Biebel
An interdisciplinary exploration of Albuquerque's multicultural evolution and growth from ranching village to regional trade and cultural center, emphasizing the impact of technology and immigration and the interplay of contemporary social and cultural forces. {Fall}

**485. Senior Seminar in the Culture of the United States. (3)**
An analysis of the value of synthesis in liberal scholarship. Focus will be on cooperative interdisciplinary research. {Spring}

**497. Individual Study. (1-3 hrs. per semester, to a maximum of 9)‡**

**498. Internship. (1-6)** Staff
This course involves internships in off-campus learning experiences related to the study of American and regional culture and character, such as work in local communities and with relevant institutions. {Fall,Spring}

***501. Interdisciplinary Seminar in U.S. Culture. (1-3)‡**
{Summer, Fall, Spring}

***551. Individual Study-Master's Degree. (1-3, hrs. per semester, to a maximum of 6)** Bannan, Biebel, Girgus, Hill, Jones

***599. Master's Thesis. (1-6, hours per semester).** Bannan, Biebel, Girgus, Hill, Jones

***606. Interdisciplinary Seminar on Problems in U.S. Culture. (4)**
Prerequisite: permission of instructor.

***651. Individual Study. (1-3 hrs. per semester, to a maximum of 12)‡**
For Ph.D. candidates only.

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# ANTHROPOLOGY

Jeremy A. Sabloff, Chairperson
Anthropology 150, 277-4524

**PROFESSORS:**

Lewis R. Binford, Ph.D., University of Michigan
Philip K. Bock, Ph.D, Harvard Univeristy
John Martin Campbell, Ph.D., Yale University
Henry C. Harpending, Ph.D. Harvard University
Alfonso Ortiz, Ph.D., University of Chicago
Jeremy A. Sabloff, Ph.D., Harvard University
Karl H. Schwerin, Ph.D., University of California (Los Angeles)
James N. Spuhler, Ph.D., Harvard University
J. J. Brody, Ph.D., University of New Mexico (Director, Maxwell Museum of Anthropology)

**ASSOCIATE PROFESSORS:**

Anita L. Alvarado, Ph.D., University of Arizona
Richard A. Barrett, Ph.D., University of Michigan
Linda S. Cordell, Ph.D., University of California (Santa Barbara)
Patricia Draper, Ph.D., Harvard University
Jeffery W. Froehlich, Ph.D., Harvard University
Larry P. Gorbet, Ph.D., University of California (San Diego)
J. Stanley Rhine, Ph.D., University of Colorado
James M. Sebring, Ph.D., University of California (Berkeley)
Lawrence G. Straus, Ph.D., University of Chicago
M. Marta Weigle, Ph.D., University of Pennsylvania

**ASSISTANT PROFESSORS:**

Caroline H. Bledsoe, Ph.D., Stanford University
James S. Chisholm, Ph.D., Rutgers University
E. Scott Rushforth, Ph.D., University of Arizona
Mari Lyn C. Salvador, Ph.D., University of California (Berkeley)

**EMERITI PROFESSORS:**

Harry W. Basehart, Ph.D., Harvard University
Florence H. Ellis, Ph.D., University of Chicago
Frank C. Hibben, Ph.D., Harvard University
Stanley S. Newman, Ph.D., Yale University

**MAJOR STUDY (36 credits)**

All majors are required to complete the seven courses in the core curriculum (21 credits) which provide an integrated preparation for advanced study in any of the anthropological subfields. It should be noted that Anth 359 has as a prerequisite Anth 110 or any introductory course in the linguistics department. Some of these prerequisites are lower division and one is considered upper division (Ling 292L), but all are acceptable for fulfilling the anthropology major and the A & S Communications Group. Courses in the anthropology core curriculum include:

| | |
|---|---|
| Archaeology: | Anth 120 Digging Up Our Past |
| | Anth 320 Strategy of Archaeology |
| Biological Anthropology: | Anth 150 Human Evolution |
| | Anth 350 Social Biology |
| Ethnology: | Anth 130 Cultures of the World |
| | Anth 330 Principles of Cultural Anthropology |
| Linguistic Anthropology: | Anth 359 Language and Culture |

Majors must also elect an additional 15 credits in anthropology, which may include a maximum of 6 credits in field and/or problems courses, and must include a minimum of 9 upper division credits (300-400 level).
All students interested in majoring or minoring in anthropology are urged to consult with one of the department undergraduate advisers as early in their academic careers as possible.

**MINOR STUDY (21 credits)**

A total of 21 credits, including at least one of the core curriculum sequences (292L, 359; 120, 320; 130, 330; or 150, 350). No more than 3 hours of field or problems courses or 9 hours of lower division (100-200 level) courses may be applied toward the minor. Alternatively, a student may select a distributed minor with an emphasis in anthropology (see below).

**DISTRIBUTED MINORS OUTSIDE ANTHROPOLOGY (30-36 credits)**

Anthropology majors with interdisciplinary interests may select from a variety of distributed minors designed to prepare students for diverse professional or educational goals. These include urban studies, folklife studies, earth sciences for archaeologists, population science, social biology, applied social research, premedicine, behavioral biology, human ecology, and regional studies (Asian, Southwestern, etc.). All courses for these distributed minors are normally taken outside of anthropology. A distributed minor comprises a total of 30 to 36 hours, dependent upon meeting a minimum of 50% upper division courses (300-400 level). In addition, students with specialized interests may design their own distributed minors and petition the Department Undergraduate Committee for approval of such programs. Details on these programs may be obtained from the Department Office.

**DISTRIBUTED MINORS WITHIN ANTHROPOLOGY (30 credits)**

Students majoring in other fields may select a distributed minor with an emphasis on anthropology. These are similar in intent and format to other distributed minors, but they require one of the core curriculum sequences and a minimum of 6 additional credits of anthropology.

**DEPARTMENT HONORS**
Students seeking departmental honors should identify a research project during their junior year in consultation with an appropriate professor and enroll in the fall of their senior year in either Anth 497 or 499; after which, they should enroll in Anth 498, an appropriate graduate seminar, or another section of Anth 497.

**GENERAL AND SURVEY COURSES**

(Designed for all students without prior courses in anthropology.)

**100. Social Science. (4)**
An introduction to the Social Science disciplines. Emphasis on intensive skills improvement in communications, reading comprehension, study techniques, and logical reasoning, which are required for further study in any of the Social Science disciplines. Course themes may vary by department, but all courses will be interdisciplinary and will emphasize skills. For students who score 13 or below in Social Science on the ACT or who are admitted with a Social Science deficiency. (Does not provide credit toward anthropology major requirements.)

**105. Natural History of Man. (3)** Staff
Fundamentals of biological and cultural anthroplogy: origin of mankind, prehistoric adaptation, and contemporary cultural and linguistic diversity. Emphasis on current research with guest lectures by specialists in each of the four fields of anthropology. (Does not provide credit toward anthropology major requirements.) {Fall, Spring}

**108. The Evolution of Human Nature. (3)** Binford
Evolutionary origins of mankind and the genesis of cultural variability. This class will discuss a variety of culturally different views of human origins. The results of recent archaeological research will be presented. (Does not provide credit toward anthropology major requirements.)

**110. Language, Culture, and Man. (3)** Gorbet, Rushforth
(Also offered as Ling 110.) Fundamentals of anthropological linguistics. The biological, structural, psychological, and social nature of language; implications for cross-cultural theory, research, and applications. Students may not receive credit for both Anth 110 and Linguistics 101. {Fall, Spring}

**111. Introduction to the Study of Language. (3)** Oller
(See Ling 101.)

**120. Digging Up Our Past. (3)** Staff
Introduction to archaeology. Uses contemporary archaeological findings to discuss aspects of cultural evolution and to teach basic concepts of archaeological theory and method. Each lecture section emphasizes data from a specific geographic area (Europe, Mesoamerica, etc.). Students are encouraged but not required to enroll concurrently in Anth 121L. {Fall, Spring}

**121L. Archaeology Laboratory. (1)** Staff
Basic techniques of excavation and methods of analysis in contemporary archaeology.
Should be taken concurrently with Anth 120. 2 hours lab. {Spring 1982 and thereafter Fall, Spring}

**125. Man in Nature. (3)** Campbell
Man's role in nature with respect to principles of biological ecology. Anthropological emphasis is on preindustrial human societies; lectures and reading will also treat critical changes which have occurred recently in human-environmental relationships. {Fall, Spring}

**130. Cultures of the World. (3)** Staff
Basic concepts and methods of cultural anthropology. Selected cultures, ranging from preliterate societies to aspects of urban civilization, will be treated. {Fall, Spring}

**150. Human Evolution.** [Primates and Fossil Man.]**(3)** Staff
Fundamentals of biological anthropology and principles of organic evolution, in relation to the biology, ecology, and behavior of primates and fossil man.
Students are encouraged but not required to enroll concurrently in Anth 151L. {Fall, Spring}

**151L. Fossil Man Laboratory. (1)** Staff
The physical basis of human evolution, from the comparative study of living and fossil primates to interpretation of recent human fossils.
Should be taken concurrently with Anth 150. 2 hours lab {Fall, Spring}

**212. People and Land in Sub-Saharan Africa. (3)** Draper
(Also offered as Geog 212.) Regional geography of Sub Saharan Africa followed by ethnographic and/or cultural physical spatial topics from the areas of West Africa, Eas Africa, South Central Africa, and Southern Africa. {Fall}

**213. African Art and Culture. (3)** Bledsoe
Survey of African art forms, aesthetics, symbolism, soci contexts, historical issues, and tourist influences. {Spring

**220. World Prehistory. (3)** Campbell, Santley, Straus,
Discusses cultural development on a world-wide basis fro the origin of the genus Homo to historic times. The cours will cover such topics as the origins of culture, civilizatio and cities.

**230. Topics in Current Anthropology. (3)‡** Staff
Experimental courses on topics of current interest.

**231. Behavior of Apes and Monkeys. (3)** Froehlich
Survey of primate behavior with emphasis on its relevan to human origins. Films of animals in their natural settin will be used and discussions focus on the ecological signi icance of social behavior. {Fall}

**237. Indians of New Mexico. (3)** Alvarado
Survey of the Indian cultures of New Mexico includi anthropological perspectives on their history, language, s cial organization, economy, health, and education. {Fall}

**250. Human Life Cycle. (3)** Spuhler
An elementary cross-cultural study of developing physiolo ical, cognitive, linguistic, and social behavior in hum embryos, fetuses, infants, children, adolescents, a adults.

**255.** [355.]**Ancient Peoples of the Southwest.** [Southwest Archaeology—Paleo-Indian.]**(3)** Cordell
Survey of prehistoric cultures of the Southwest from Pal Indian times to the Historic Period. {Spring}

**260. Southwest Crafts in Context.** [Cultural Context of Southwest Crafts.](3)
Socio-economic, cultural and historic factors that contribute to the contemporary survival or revival of Native American crafts of the Southwest, including pottery, textiles, and jewelry-making.

**284. Ancient Mexico.** (3) Sabloff, Santley
An intensive archaeological survey of the pre-Columbian civilizations of Mexico and adjacent areas. Open to undergraduates with no previous courses in anthropology. {Spring}

***325. Anthropology of China.** (3) Spuhler
An introductory survey of the population biology, archaeology, cultural anthropology, and comparative linguistics of China from the Middle Pleistocene to the 1949 Communist Revolution and the contemporary modernization of the Peoples Republic of China.

***341. Biosocial Bases of Sex Roles.** (3) Draper, Harpending
Biological and sociological bases of sex role differentiation. {Spring}

***402. American Indian Art I.** (3) Brody
(Also offered as Art Hist 402.) Prehistoric and historic art forms of the Arctic, Northwest Coast, and the eastern woodlands of North America.

***403. American Indian Art II.** (3) Brody
(Also offered as Art Hist 403.) Prehistoric and historic art forms of the Plains, Southwest, and western regions of North America.

**SPECIAL INTEREST COURSES**
In general, prerequisites are listed with each course description. If none are listed, the class is designed for those without previous courses in anthropology.

**ARCHAEOLOGY**
(Anthropology 120 is suggested as background for the following courses.)

**312. European Prehistory.** (3) Straus
The prehistory of Europe with emphasis on hunter-gatherer adaptations of the Pleistocene and early Holocene, using primary data sources. {Spring 1982 and alternate years}

**320. Strategy of Archaeology.** (3) Binford
The purpose and theory of the study of archaeology; relates archaeology to anthropological principles and the practice of a science.
Prerequisites: 120 and 130. {Fall}

**349. Archaeology of Complex Societies.** (3) Cordell
Comparative approach to origin and development of stratified societies and pristine states as known from the archaeological record. {Fall}

**356. Southwest Archaeology.** [Southwestern Archaeology—Archaic to Present.](3) Cordell
An intensive survey of Southwest prehistory including discussion of major interpretative problems. Covers the period from 11,000 years ago to historic times. {Fall}

**362. Topics in Old World Prehistory.** (3) Binford, Straus
The prehistory of specific Old World regions, concentrating on the record of changing Pleistocene adaptations. {Spring 1981 and alternate years}

**366. Archaeological Field Techniques.** (3) Staff
Site survey, techniques of excavation, field mapping, data recording, initial laboratory analysis, cataloging, and site reporting.
Prerequisites: 120 and permission of the instructor. {Spring}

**385. American Archaeology: North America.** (3) Binford
Critical analysis of research problems in North American prehistory. Course will focus on explaining social, cultural, and economic change as reflected in the archaeological record.

**386. American Archaeology: South America.** (3)
The archaeology of the continent of South America from the time of the Paleo-Indian to the European period. Emphasis upon the Andean area.

**391. Near Eastern Archaeology.** (3)
Survey of the Near Eastern culture area from the origins of agriculture to the development of Bronze Age civilization.

***420. Topics in Archaeology.** (3)‡

***466. Archaeological Research Methods.** (3) Staff
Collection, interpretation, and analysis of archaeological and Paleoenvironmental data.
Prerequisites: 120 or permission of the instructor, intro. statistics; recommended: 320

***467. Analytic Methods in Archaeology.** (3) Staff
Specific, individualized instruction on qualitative and quantitative methods of archaeological data analysis. Students will do all phases of data analysis from initial selection of attributes to computer processing, tabulation, and interpretation of results.
Prerequisites: permission of instructors.

***507. Seminar: Archaeological Theory and Method.** (3)‡

***516. Seminar: European Prehistory.** (3)
{Offered upon demand}

***520. Topics in Archaeology.** (3)‡

***582. Seminar: American Archaeology.** (3)‡
{Offered upon demand}

***594. Seminar: Southwestern Archaeology.** (3) Judge
{Offered upon demand}

**BIOLOGICAL ANTHROPOLOGY**

***331. Evolutionary Biology of Primates.** (3)
Evolutionary history of the primates, including the earliest humans, and the comparative biology of living primates. Students are encouraged but not required to enroll concurrently in 332L.
Prerequisites: 150 or 231. {Spring 1981 and alternate years}

***332L. Primate Biology Laboratory.** (1) Froehlich
Methods used in the study of primate evolution and classification.
Concurrent enrollment in Anth 331 required. {Fall}

***343. [454.]Human Population Biology.** (3) Harpending
Survey of demographic and ecological principles underlying human adaptation; topics to include subsistence systems, nutrition, infectious diseases, breeding structures, population, and cultural evolution.

***350. Social Biology.** (3) Spuhler
Historical background including social Darwinism and eugenics; human heredity, variation, and adaptation within and between different ecological and cultural settings; medical genetics; quantitative variation; elements of human population biology and human ecology.
Prerequisite: 150 or introductory biology.

***351L. Anthropology of the Skeleton.** (3) Rhine
A laboratory course in the identification of human skeletal materials with attention to problems in the evolution of primates. 2 lectures, 2 hrs. lab.
Prerequisite: 150 {Fall}

***388. Human Genetics.** (3) Spuhler
Fundamentals of human transmission, cellular, molecular, developmental, and population genetics. {Spring 1982 and alternate years}

***432. Primate Anatomy.** (4) Froehlich, Rhine
Comparative functional, myological, and osteological anatomy of the primates. Emphasis placed upon dissection and comparison of specimens. 2 hrs. lecture, 6 hrs. lab.
Prerequisite: 331 or 231. {Spring 1981 and alternate years}

***450. Topics, in Biological Anthropology.** (3)‡
{Fall, Spring}

***452. Human Population Genetics.** (3) Harpending
Theory and methodology of the study of human genetic variation within and between populations.
Prerequisites: 350 or 388 or equivalent; one year of calculus; Math 102 or equivalent.

***453. Human Behavioral Genetics.** (3) Spuhler
The intersection between genetics and the behavioral sciences. {Spring 1981 and alternate years}

***455. Advanced Human Evolution.** [Human Evolution.](3) Rhine
Evolutionary significance of various hominid characteristics; comparisons of significant fossil forms. Students are encouraged but not required to enroll concurrently in 456L.
Prerequisite: 150. {Spring 1982 and alternate years}

***456L. Human Evolution Laboratory.** (1) Rhine
Anthropometric and anthroposcopic comparisons of fossil and recent hominoids. {Spring}

***465. Medical Anthropology.** (3) Alvarado
Analysis of systems of health, curing, and disease in aboriginal, western, and pluralistic societies. {Spring 1982 and alternate years}

***531. Seminar: Problems in Primatology.** (3) Froehlich, Rhine
{Spring 1982 and alternate years}

***550. Topics in Biological Anthropology.** (3)‡

***551. Topics in Social Biology.** (3)‡

***552. Seminar: Topics in Evolutionary Theory.** (3)

***553. Forensic Anthropology.** (3) Rhine
Prerequisite: 351 or familiarity with skeletal biology.

**ETHNOLOGY**

**301-302. Interdepartmental Studies in the Culture of the United States.** (1-3, 1-3)
(See Am St 301-302.)

***305. The American Indian: North America.** (3) Ortiz
Major culture types and selected ethnographic examples of North American Indian cultures. {Spring}

***306. South American Indians.** [The American Indian: Lowland South America.](3) Schwerin
Approaches to explaining differential cultural adaptations to the diversity of South American environments. Development of aboriginal social and political organization is illustrated by selected examples from both lowland and highland societies. {Fall}

***308. Psychological Anthropology.** (3) Bock
Materials and concepts useful in understanding the influence of group culture upon personality and of the individual upon his/her society. {Spring 1981 and alternate years}

***309. Comparative Studies of Socialization.** (3) Draper
Socialization of children in varied cultural settings: hunter-gatherers, tribal African societies, peasant cultures. Socialization theories and practices in modern states, e.g., Russia, United States, and Israel. Emphasis on theories of learning, cognitive and child development.

***313. [439.]Peasant Cultures of the World.** (3) Bock
Comparative studies of peasant societies with emphasis on Europe and Latin America. The internal structure of peasant communities and their relations to the state under feudalism, capitalism, and socialism.

***314. Latin American Culture and Societies.** (3) Barrett, Schwerin
Cultural and social institutions common throughout Latin America and their historical antecedents. Contemporary social movements and their prognosis for the immediate future. Analyses of the variations among selected Latin American societies. {Fall}

***315. Current American Indian Problems.** (3)
The problems of reservation and urban Indians. Discussion of selected topics such as Indian education, social problems and adjustments, economic development, and the urban Indian scene.

***316. Applied Anthropology.** (3)
The application of anthropological methods and principles to problems of intercultural communication and social change.
Prerequisite: 130.

***321. Ethnology of South Asia.** (3) Sebring
Survey of modern social structures and cultures of South Asia with emphasis upon selected areas and problems. {Spring}

***330. Principles of Cultural Anthropology.** (3)
Social, economic, and ecological adaptations of human cultures. Consideration of development of ideas and theories in socio-cultural anthropology; focus on topics such as integration of human societies, sources for change in economic and cultural systems.
Prerequisite: 130

***333. [436.]Ritual Symbols and Behavior.** (3) Ortiz
Comparative analysis of ritual processes, symbol systems, and world views in the context of social structure. {Fall}

***335. [435.]Comparative Value Systems.** (3) Sebring
A comparative treatment of values, views, belief systems of selected societies; basic premises and tenets revealed in a society's interpretation of its experiences; examination of relation between values, world views. {Fall 1982 and alternate years}

***336. Ethnology of Africa. (3)** Draper, Bledsoe
Cultural and social patterns characteristic of sub-Saharan Africa with special reference to problems of culture history and comparative political organization.
Prerequisite: 130 or permission of instructor. {Spring}

***337. Southwest Indians I: Colonial Period. (3)** Alvarado
Analyses of the native cultures of the Southwest and the changes resulting from Hispanic contact and incorporation; Indians as ethnic minority groups in the Spanish colonial period. {Fall}

***338. Southwest Indians II: Modern. (3)** Alvarado
Analyses of changes in Native American cultures in the post-colonial period, including urban Indians. {Spring}

***339. Anthropological Studies of American Society and Culture. (3)** Sebring
The empirical results and the practical and theoretical implications of the study by anthropologists of American society and culture. Other disciplinary approaches will be contrasted with anthropological approaches.

***340.** [440.]**Man in the Tropics. (3)** Schwerin
Nature of tropical ecosystems and the ways in which man has adapted to them. The conditions for civilization in the tropics, and contemporary problems of tropical development.

***345. Spanish-Speaking Peoples of the Southwest. (3)** Alvarado
Analysis of the ethnohistory and modern culture patterns of Spanish-speaking peoples of the Southwest. {Spring 1981 and alternate years}

***346. Ethnography of Communication. (3)** Weigle
Observation, description, and analysis of verbal and nonverbal communication in mundane and artistic situations. Special emphasis on narration, humor, song, dreams, and concepts of creativity cross-culturally. {Fall}

***347. Folklife Studies. (3)** Weigle, Salvador
Folk culture: community studies, ethnohistory, festivals, games, folk religion, folk medicine and witchcraft, folk arts and crafts. Emphasis on American and especially Southwestern groups.

***348. Social Anthropology of Complex Societies. (3)** Barrett
Main contributions of anthropology to the study of complex societies, with special attention to the methods and techniques utilized in the study of these societies.
Prerequisite: 130.

***361. Modernization of Traditional Societies. (3)** Barrett
The impact of technological and cultural change on societal institutions with special attention to underdeveloped areas.

***365. Political Anthropology. (3)**
Study of the politics of small scale communities and the national state.

***371. Images of the Indian in American Culture. (3)** Ortiz
Analysis of literary, historical, ethnographic, and contemporary texts, written by both Indians and non-Indians, to understand Native American peoples' reaction and adjustment to conquest and domination.
Prerequisite: 305 or permission of instructor.

***384.** [382.]**Peoples of Mexico. (3)** Schwerin
Emergence of the modern Indian and Mestizo cultures of Mexico and Guatemala. Persistence and change in social institutions and cultural patterns.

***396. Cultural Ecology. (3)**
The ecological orientation in explaining human behavior. Focus is upon the systemic relationships among ecological, demographic, social, and cultural variables.
Prerequisites: 120 and 130. {Fall}

***397. Music in Society. (3)** Bock
Examination of the functions of music in tribal and modern society; tools of analysis; survey of selected samples of musical culture.
Recommended: ability to read simple music. {Fall 1981 and alternate years.}

***430. Topics in Ethnology. (3)‡**
Comparative study of social, economic, and political systems, their evolution and interrelations.

***487. Research Methods in Ethnology. (3)** Bledsoe
Research strategy in ethnology, research design formulation, techniques for the collection of ethnological data, and an introduction to ethnological fieldwork.
Prerequisites: 130, 330.

***493. History of Anthropology. (3)**
The development of anthropological theory from the nineteenth century to the contemporary period, with major emphasis on cultural anthropology. Offered upon demand

***530. Topics in Ethnology. (3)‡**
{Fall,Spring}

***536. Seminar: Theories of Symbolic Action.** [Seminar: Symbolism and Ritual.]**(3)**

***537. Seminar: Southwestern Ethnology. (3)**
{Fall 1981 and alternate years.}

***538. Seminar: Culture Change. (3)** Alvarado
{Fall 1982 and alternate years.}

***539. Seminar: Cultural Ecology. (3)**

***541. Seminar: Theory and Method in Ethnology. (3)**

***542. Seminar: Urban Anthropology. (3)**

***543. Seminar: Topics in Psychological Anthropology. (3)**

***544. Seminar: Applied Anthropology. (3)**

***545. Seminar: Anthropological Problems in Latin America. (3)**

***546. Seminar: Political Anthropology. (3)**

***547. Seminar: Topics in Social Organization and Kinship. (3)**

***548. Seminar: Complex Societies. (3)**

***549. Seminar: Economic Anthropology. (3)**

***561. Seminar: Economic Development and Social Change. (3)**

## LINGUISTICS

Courses with similar content and the same number as 110, 317, 318, 359, 417, 418, 446, 470, and 554 are cross-listed by the Department of Linguistics. Students may obtain credit for these courses in only one department; credits from either department may be applied toward the anthropology major degree requirements and for fulfillment of the Communication Group in Arts and Sciences.

**292L. Introduction to Linguistic Analysis. (3)**
(See Ling 292L.)

***317. Phonological Analysis. (3)** Gorbet, Rushforth
(Also offered as Ling 317.) Phonetic principles and phonological theory, descriptive analysis of phonological systems, transcriptional practice, and problems from selected languages.
Prerequisites: Ling 292L. {Fall}

***318. Grammatical Analysis. (3)**
(Also offered as Ling 318.) Principles of morphological and syntactic analysis and the theory of grammar, descriptive analysis of grammatical structures, problems from selected languages.
Prerequisite: Ling 292L. {Spring}

***352. Verbal Art. (3)** Weigle
Comparative study of non-Western oral traditions as cultural and aesthetic expressions. Narratives, oratory, verbal aggression, proverbs, riddles, poetry; ethnoaesthetics; other topics.
Prerequisite: 110 or 346 or permission of instructor. {Spring}

***359. Language and Culture. (3)** Gorbet, Rushforth
(Also offered as Ling 359.) An examination of the interrelations of language and speech with other selected aspects of culture.
Prerequisite: an introductory linguistics course. {Fall}

***405. North American Indian Languages. (3)** Gorbet, Rushforth
Survey of North American native languages and contemporary speech communities, including examination of the structure of one or more Southwestern native languages.
Prerequisite: 317 or 318 or Ling 292L. {Spring}

***410. Topics in Anthropological Linguisitcs. (3)‡**
May be repeated as subject matter varies.

***413. Linguistic Field Methods. (3)** Gorbet
Practice in transcribing from oral dictation, phonemic analysis, introduction to problems of morphology.
Prerequisites: 317 and consent of instructor. {Spring}

***417. Phonological Theory. (3)**
(Also offered as Ling 417.) Survey of problems in theoretical phonology, with emphasis on generative phonology, formalization of rules, and universals.
Prerequisite: 317. {Spring}

***418. Grammatical Theory. (3)**
(Also offered as Ling 418.) Survey of problems in theoretical grammar. Topics range from syntax to pragmatics.
Prerequisite: 318. {Fall}

***446. Introduction to Comparative Linguistics. (3)**
(Also offered as Ling 446.) Theories and methods of comparative and historical linguistics, emphasizing change in English, Indo-European, and Native American languages.
Prerequisite: 317.

***470. History of Linguistics. (3)** Gorbet
(Also offered as Ling 470.) A survey of methods and assumptions in the scientific study of language from antiquity to present; emphasis on twentieth-century precursors of modern linguistics.
Prerequisites: 317 and 318.

***510. Topics in Anthropological Linguistics. (3)‡**

***554. Seminar: Linguistic Theory. (3)**
(Also offered as Ling 554.) May be repeated for credit as subject matter varies. {Offered upon demand}

## TECHNICAL

**304. Beginning Museology. (3)**
History, philosophy, and purpose of museums. Techniques and problems of museum administration, education, collection, exhibition, conservation, and public relations. {Fal 1981 and alternate years}

***390. Introduction to Anthropological Research. (3)**
The use and abuse of inductive, deductive, and nondeduc tive inference in anthropological research. Survey of ele mentary statistical principles and methods. Emphasis or cross-cultural analyses.
Prerequisites: two courses from 110, 120, 130, or 150 Math 120 or equivalent.

**460. Seminar in Museology and Museography. (3)** Brody
(Also offered as Art Hi 460.) Practical and theoretical wor in specific museum problems.
Prerequisite: 304 or Art Hi 400 or permission of instructor

***490. Topics in Mathematical Anthropology. (3)** Harpendin
Formal and mathematical approaches to anthropologic research. Topics include graphs and networks, linear sys tems and filtering, probability models.
Prerequisites: calculus (recommended: linear algebra) an a computer language.

***560. Seminar in Museology and Museography. (3)** Broc
Prerequisite: 304 or Art Hi 400 or permission of instructo

## INDIVIDUAL STUDIES, FIELD PROGRAMS, AND HONOR COURSES

**399F. Introduction to Field Research. (2-6)†**
Directed study under the supervision of faculty member.
Prerequisite: permission of instructor. {Offered up demand}

***475F. Summer Field Session.** [Advanced Summer Fie Session]**(2-6)‡**
Field course in archaeology, biological anthropology, li guistic or enthology. This course includes intensive instru tion in field techniques and opportunity for independe research (on the part of the student). May be repeated credit.
Prerequisite: permission of instructor. {Summer only}

**497. Individual Study. (1-3 hrs. per semester, to a ma mum of 6)**
Directed study of topics not covered in regular courses.

**498. Honors Seminar. (3)** Staff
Readings and discussions concerning anthropological search methods, sources, goals, and professional ethi Open to upper division majors and concentrators wh applications for the honors programs have been approv {Offered upon demand}

***499F. Field Research. (2-6)†**
Field research for qualified advanced or graduate stude with previous experience in archaeology, linguistics, or g eral ethnology. Problems are selected on the basis of dent-faculty interest and field research opportunities.
Prerequisite: permission of instructor. {Offered u demand}

***597. Problems. (1-3 hrs. per semester, to a maximum of 6)**
Limited to graduate majors in the master's program.

***598. Advanced Research. (3)‡**
Limited to graduate majors in the master's program.

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***697. Problems. (1-3 hrs. per semester, to a maximum of 6)**
Limited to graduate majors in the doctoral program.

***698. Advanced Research. (3)†**
Limited to graduate majors in the doctoral program.

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# ARCHITECTURE AND PLANNING

George Anselevicius, Dean
Architecture 104, 277-3133

**PROFESSORS:**
George Anselevicius, Diploma of Arch., Leeds School of Arch., England
Richard C. Cohlmeyer, B.S., University of Illinois
Wolfgang F. E. Preiser, Ph.D., Pennsylvania State University
Jon P. Schlegel, M. Arch., Massachusetts Institute of Technology
Anne P. Taylor, Ph.D., Arizona State University

**ASSOCIATE PROFESSORS:**

Richard A. Anderson, Ph.D., Michigan State University
Paul E. Lusk, M.Arch., University of Pennsylvania
Richard S. Nordhaus, M. Arch., University of Pennsylvania
William J. Siembieda, M.C.R.P., University of California (Berkeley)
Robert C. Walters, B.F.A., University of New Mexico

**ASSISTANT PROFESSORS:**

Judith Cherry, M.Arch., Rice University
Stephen Dent., M.Arch., Arizona State University

**LECTURERS:**

David Kal, M.A.; University of Illinois
Howard B. Norris, B.A., Howard University

Students are reminded that charges for classroom supplies and services for certain architecture courses must be paid during the first three weeks of each semester.

**ARCHITECTURE**

**101. Introduction to Architecture. (3)**
Architecture—the social, historical, perceptual, and technical determinants; current and likely future directions; the people and processes involved. {Fall, Spring}

**103. Introduction to Design Skills. (3)**
Laboratory, lectures, and exercises to learn basic two- and three-dimensional problem solving in perception, cognition, and the development of graphic skills for recording and visual communication. {Fall, Spring}

**104. Design I. (1 or 3)**
Introduction to design concepts and methods, lab and lectures with emphasis on perception analysis, space manipulation, and integration of basic design determinants. Open by interview to students enrolled in the School of Architecture and Planning.
Prerequisite: grade of B or better in Arch 104 or faculty approval of equivalent work. {Fall}

**105. Design II. (1 or 3)**
Continuation of 201.
Prerequisite: 201. {Spring}

**106. Environmental Problems. (3)**
(Also offered as Pol Sc 204.) Exploration of the political and social determinants of environmental conflict. The course focuses on how environmental problems are conceived and solved in contemporary society. The perspectives offered are those of political science, chemistry, geology, environmental design and planning.

**261. Architecture History I. (3)**
Architecture from the ancient world to the Middle Ages as part of larger social, cultural, political and economic context. {Fall}

**262. Architecture History II. (3)**
Architecture from the Middle Ages to modern times as part of the larger social, cultural, political and economic context. {Spring}

**271. Introduction to Design and Behavior. (3)**
Issues and case studies on relationships between the built environment and its users. {Fall}

**285. Building Technology I. (3)**
Lab and lectures—introduction of technological aspects of building design and construction. {Fall}

**°301. Design III. (4)**
Continuation of lab and lectures on design concepts and methods with building design problems of increasing complexity.
Prerequisite: 202 or equivalent. 1 lecture, 3 hrs. lab. {Summer, Fall}

**°302. Design IV. (4)**
Continuation of lab and lecture on design concepts and methods, emphasis on group work.
Prerequisite: 301 or equivalent. 1 lecture, 3 hrs. lab. {Summer, Spring}

**343. Pre-Columbian Architecture. (3)**
(Also offered as Art Hi 343.) North, South, and Mesoamerican pre-Columbian architecture, with emphasis on cultural background of ancient civilizations. {Fall}

**357. Landscape Design. (3)**
Lecture and field assignments—concepts and methods of site and landscape design plus use of plant material and other media.
Prerequisite: 202. {Fall}

**361. Architecture in Europe Since 1750.** [Architecture Since 1750.]**(3)**
(Also offered as Art Hi 361.) Survey course covering the period from 1750 to 1930; topics include Revival, The Industrial Revolution, Rise of American Architecture, Turn of the Century, The Roots of Modern Architecture. {Fall}

**362. Problems in Theory and Criticism. (3)**
(Also offered as Art Hi 362.) Theories of the twentieth century's architects and architectural groups—criticism and evaluation of current modern trends in architecture. {Spring}

**365. Urban Design, Concepts, and Methods. (3)**
Lectures, reading, and field exercises to develop understanding of specific urban environments in relationship to architecture, planning, and other environmental design activities.
Prerequisite: 202. {Fall}

**373. Programming for Design. (3)**
Lecture and case study evaluation. Concepts and methods for converting social objectives and problems into operational design criteria.
Prerequisite: junior standing. {Fall, Spring}

**385. Building Technology II. (3)**
Lectures on analysis for building energy systems such as thermodynamics, heat transfer, solar and conventional energy use.
Prerequisites: 1 semester of physics, Arch 285 {Fall}

**386. Building Technology III. (3)**
Design of environmental control systems; heating, cooling, plumbing, power, and light.
Prerequisite: 385. {Spring}

**°401. Design V. (4)**
Lab, architectural design of complex and large-scale problems, such as housing, educational facilities, neighborhood facilities.
Prerequisite: 302 or equivalent. 1 lecture, 3 hrs. lab. {Summer, Fall}

**°402. Design VI. (4)**
Lab, individual selection of project types consistent with senior design interests and abilities.
Prerequisite: 401 or equivalent. 1 lecture, 3 hrs. lab. {Summer, Spring}

° Open to students enrolled in the School of Architecture and Planning or by special permission of the instructor.

**429. Problems. (1-3) †**
Students wishing to undertake a special study project must have instructor approval. {Fall, Spring}

***431. Professional Practice/Internship. (2-4)**
Planned program of actual experience with an employer such as an architect, planning agency, engineering consultant, or building contractor, plus 2-hour weekly seminar which deals with the issues involved in the establishment and operation of an architectural practice.
Students must have 160 hrs. work experience as pre- or corequisite. {Spring}

***457. Landscape Architecture: Advanced. (3)** Morrow
Design development exercises and intensive study of landscape architectural history, professional practice, plant materials, and landscape architecture as a function of site planning and urbanism. Special attention is paid to New Mexico conditions.
Prerequisite: Arch 357 or equivalent. {Spring}

***462. Seminar. (2-3)**
Individually listed topics each semester. {Fall, Spring}

***468. Urban Design: Concepts and Methods.** [Urban Design Practice.]**(4)**
(Also offered as CRP 468.) Overview of the main theoretical and methodological elements in urban design. Emphasis on technique and application. {Spring}

***471. Advanced Topics in Design and Behavior.** [Design and Behavior: Concepts.]**(3)**
Exploration of current theoretical concepts of relationships between the built environment and its users. Case study applications.
Prerequisite: 271 or permission of instructor. {Spring}

***472. Exploring Albuquerque's Environment. (3)**
(Also offered as SATE 472.) Lectures and student research on issues in the cultural, natural and built environment in Albuquerque.

***473. Advanced Programming. (3)**
Theory and techniques for analyzing complex social and organizational situations and translating that analysis into design criteria for physical facilities.
Prerequisite: 373 or permission of instructor. {Spring}

***474. Cultural Implications of Built Environment. (2)**
A study of the built environment as cultural evidence. Techniques are developed for analyzing the cultural and social implications of the built environment. {Fall or Spring}

**482. Lighting. (2)**
{Fall or Spring}

**483. Acoustics. (2)**
Concepts, theory, and methodology for analysis and design of acoustical environments. {Fall or Spring}

***484. Building Systems Estimating. (2)**
Sources of building costs, methods for determining costs, a systems approach for cost estimating.
Prerequisite: 285. {Fall, Spring}

***485. Working Drawings and Specifications. (4)**
Development of partial contract of documents from actual building projects including office methods and procedures.
Prerequisites: 302 and 386. {Fall, Spring}

***498. Design and Planning Assistance Center. (6) ‡**
Architectural and planning services to organizations and groups thoughout the state who cannot afford traditional professional services. May repeat to a total of 12 hours. Advance approval required.
Prerequisite: 301 or consent of instructor. {Summer, Fall, Spring}

**499. Comprehensive Review. (8)‡**
Comprehensive introduction to architecture leading to a Master of Architecture degree for students with undergraduate degrees in other fields. Introduces students to environmental and social issues in architecture, architectural design, and building technology. Open only to students admitted to the program
Prerequisite: Arch 104 or equivalent. {Fall, Spring}

***501. Graduate Design Studio and Seminar. (6)**
Entry by graduate standing or special permission. (Undergraduates with senior standing may be admitted.) {Fall}

***502.** [501.]**Graduate Seminar. (6)**
{Spring}

***551. Problems. (1-3)**
May be repeated to a total of 12 hours. {Fall, Spring}

***562. Seminar. (2-3)**
{Fall, Spring}

***571. Current Issues in Design and Behavior.** [Design and Behavior: Theory.]**(3)**
Undergraduates with senior standing may be admitted. {Fall}

***572. Current Issues in Design and Behavior.** [Design and Behavior: Field Research.]**(3)**
Undergraduates with senior standing may be admitted. {Spring}

***588. Independent Design Project I. (4)**
Plan II only.
Prerequisite: 501 or equivalent; advance approval by faculty member. {Fall, Spring}

***589. Independent Project II. (6)**
Plan II only.
Prerequisite: 588. {Fall, Spring}

***598. Thesis Research. (4)**
Plan I only. Requires advance approval by thesis chairperson.

***599. Thesis. (1-6)**
Plan I only.
Prerequisites: 598 or equivalent and advance approval.

# COMMUNITY AND REGIONAL PLANNING

**165. Introduction to the City. (3)**
Introduction to the spatial, economic, political and physical factors involved in the development of cities and towns. Emphasis on the nature of urban form as a reflection of the prevailing past and present political economy of society. {Fall}

**181. Introduction to Environmental Problems. (3)**
Development of the major issues, concepts and methods emerging from the relationship of social systems and the natural environment. {Fall or Spring}

**203. The Environmental Problem. (3)**
(Also offered as Econ and Phil 203.) What are the environmental problems and how they are approached by various disciplines; how problems are defined; limits imposed on scope of problems, solutions and tradeoffs.

**265. Community Planning: Concepts and Methods. (3)**
Exploration of land-use activities, transportation systems, municipal services, and design as related to the community planning process. {Spring}

**281. Environmental Evaluation.** [Environmental Impact Review.]**(3)**
Principles and techniques of evaluating the impact (social, economic, and phsyical) of development of natural systems. Emphasis on understanding of interrelationships and document preparation. {Fall or Spring}

**338. The City in History. (3)**
(Also offered as Hist and Soc 338.) An overview of the development of urban forms throughout history, with emphasis on modern times, which examines the causes of urban growth and change and the ways in which cities have affected the course of development of Western society. {Spring}

**429. Problems. (1-3)**
Problems are individualized topics conducted on a one to one student-faculty arrangement. The course allows for exploration of various subjects of interest to students and faculty members. May be repeated for credit to a total of 6 hours. {Fall, Spring}

***463.** [366.]**The Housing Process.** [Urbanization and Housing.]**(3)**
Principles of housing development in the U.S. and developing countries. Overview of the effects of migration, finance and public programs on the provision of shelter. Use of case studies and field projects included. {Fall or Spring}

***464. Land Development Economics.** [Land and Community Development.]**(3)**
Case studies in concepts and processes involved in the changing of raw land to urban fabric. Public and private sector roles involving housing, shopping, and all community facilities. {Fall}

***465. Community and Regional Planning Methods.** [Urban and Regional Planning Methods.]**(3)**
(Also offered as Econ and Pol Sc 465.) Readings and case studies of city- and regional-scale planning process, integrating social science and physical design methods. {Fall}

***466. Economics for City Planning. (3)**
(Also offered as Econ 466.) This course introduces quantitative methods of city and development planning. Topics include cost-benefit analysis, including heroic quantification and social physics (simultaneous design of transportation and land use).
Prerequisite: Econ 201. {Spring}

***467. Research Concepts and Methods. (3)**
Introduces students to behavioral and physical research concepts. Course covers descriptive and inferential statistics; prepares students to evaluate and to carry out research in architecture, planning, and environmental design.

***468. Urban Design Concepts and Methods.** [Urban Design Practice.]**(4)**
(Also offered as Arch 468.) Overview of the main theoretical and methodological element in urban design. Empahsis on techniques and application. {Spring}

***469. Rural Environmental Planning Studio. (4)**
Principles and applications of the techniques involved in planning for rural and small community settings. Emphasis on the maintenance of rural settings and the understanding of the culture and value unique to rural development issues. {Spring}

***497. Social Planning Seminar. (3)**
(Also offered as Pub Ad 497.) Consequences of social and cultural change on design and planning.
Prerequisite: senior standing. {Fall or Spring}

***500. Professional Problems and Practices Studio. (4)**
{Spring}

***506. Internship. (2)**
{Summer, Fall, Spring}

***551. Problems (1-3)**
Consent of instructor required. {Fall, Spring}

***563. Housing Seminar. (3)**
{Fall or Spring}

***564. Regional and Resource Planning.** [Regional Planning Seminar.]**(2)**
Prerequisite: 472 or consent of the instructor. {Spring}

***565. The Planning Process: Theory and Practice. (3)**
{Fall}

***570. Seminar. (2-3)**
Individually listed topics each semester. {Fall, Spring}

***575. Seminar on Energy Administration. (3)**
(Also offered as Pub Ad 575.)

***582. Advanced Environmental Analysis. (3)**
{Spring}

***598. Thesis Research. (1-4)**
{Fall, Spring}

***599. Thesis. (1-6)**
Prerequisite: 598 or equivalent and approval by thesis chairperson. {Summer, Fall, Spring}

# ART

Garo Z. Antreasian, Chairperson
Art 204, 277-5861

**PROFESSORS:**

Clinton Adams, M.A., University of California (Los Angeles)
Garo Z. Antreasian, B.F.A., John Herron School of Art
Jacob Jerome Brody, Ph.D., University of New Mexico
Thomas F. Barrow, M.S., Institute of Design, Illinois Institute of Technology.
Nicolai Cikovsky, Jr., Ph.D., Harvard University
Ralph Lewis, M.A., University of New Mexico
Harry Nadler, M.A., University of California (Los Angeles)
Carl E. Paak, M.A., Ohio State University
Mary Elizabeth Smith, Ph.D., Yale University
Samuel David Smith, Studied in Africa, Orient, Near East and the United States

**ASSOCIATE PROFESSORS:**

R. Nicholas Abdalla, M.A., University of New Mexico
Jane E. Abrams, M.F.A., Indiana University
Betty Hahn, M.F.A., Indiana University
Wayne R. Lazorik, M.F.A., University of Minnesota
Howard D. Rodee, Ph.D., Columbia University
O. Joseph Rothrock, M.F.A., Princeton University
Peter Walch, Ph.D., Princeton University

**ASSISTANT PROFESSORS:**

Timothy App, M.F.A., Tyler School of Art, Temple University
Flora Clancy, Ph.D., Yale University
Douglas R. George, M.A., University of Minnesota
Mary Grizzard, Ph.D., University of Michigan
Aaron Karp, M.F.A., Indiana University
Molly Mason, M.F.A., University of Iowa
John H. Wenger, M.F.A, University of Arizona
Gwen Widmer, M.F.A., Chicago Art Institute

**LECTURERS:**

Elen Feinberg, M.F.A., Indiana University
James Jacob, M.A., University of New Mexico
Christopher Mead, M.A., University of Pennsylvania
John S. Sommers, B.A., Albion College

**INSTRUCTOR:**

Alfred Hoyt Corbett, Jr., M.F.A., University of Wisconsin, Madison

Explanation of footnotes not indicated will be found on p. 78

**MAJOR STUDY**

1. For the student enrolled in the College of Fine Arts wh wishes to pursue a studio emphasis, a 70-hour majc offered under the preprofessional curriculum leads to th degree of B.F.A. (See curriculum, p. 54 .)

2. For the student enrolled in the College of Fine Arts wh wishes to pursue an art history or an art studio emph sis, a 48-hour major offered under the general (liber arts) curriculum leads to the degree of B.A. in Fine Art (See curriculum, p. 55 .)

3. For the student enrolled in the College of Arts ar Sciences, a 33-hour major may be taken with an emph sis either in studio or art history. Of these 33 hours, least 12 must be in courses numbered above 300.
The major with an emphasis in studio is as follows: 9 hours of art history including Art Hi 150 and 250. 24 hours in art studio including Art St 106, 121, a 122.

The major with an emphasis in art history is as follow 24 hours in art history courses, including Art Hi 150 and 250.9 hours in art studio fundamentals inclu ing Art St 121, 122, and 106 (or 187).

**MINOR STUDY**

The minor in art in either art studio or art history consi of 24 semester hours with at least 6 hours at the 300 le or above.

**MATERIALS AND STUDENT WORK**

Students enrolling in art courses furnish their own materi except for certain studio equipment provided by University.

All work when completed is under the control of the Dep ment until after the exhibitions of student work. Each s dent may be requested to leave one or more pieces original work with the Department.

Students are reminded that charges for classroom supp and services in certain art studio courses must be paic the UNM Cashier during the first three weeks of each mester. Refunds will be given according to the ref schedule in the Student Expenses section of this cata pp. 17

# ART STUDIO

**NON-MAJOR COURSES**

The following courses are specifically designed as intro tions to studio art for those students who do not inten major or minor in art. No previous preparation is expec

**102. Painting for Non-majors. (3)‡**
Basic principles of still life, figure, and landscape painting. {Fall, Spring}

**105. Watercolor Painting for Non-majors. (3)‡**
Principles of watercolor painting, with an emphasis on landscape. Offered upon demand

**110. Sculpture for Non-majors. (3)‡**
Principles of sculptural form, techniques, and materials. {Fall, Spring}

**115. Ceramics for Non-majors. (3)‡**
Introduction to the forms, methods, and materials of ceramics. {Fall, Spring}

**120. Jewelry and Metalwork for Non-majors. (3)‡**
Introduction to the design, materials, and techniques of jewelry and metalwork. {Fall, Spring}

**142. Drawing for Non-majors. (3)‡**
Principles, mechanics, and materials of descriptive drawing. {Fall, Spring}

**185. Photography for Non-majors I. (3)**
Introduction to cameras, materials, processes, and photographic vision. {Fall, Spring}

**186. Photography for Non-majors II. (3)‡**
Continuation of 185, with greater emphasis on the aesthetics of photography.
Prerequisite: 185. {Fall, Spring}

**MAJOR COURSES**

Art 106, 121, 122, 187 are the fundamental courses in studio art. Some or all of them are prerequisite to all 200-level or above studio courses and are designed for students planning to major or minor in art. See course listings for specific prerequisites:

**06. Drawing Fundamentals. (3)**
he basic materials and mechanics of drawing, and the evelopment of descriptive and perceptual skills. {Summer, all, Spring}

**21. Two-dimensional Design. (3)**
he basic materials and mechanics of surface organization, patial mobility, value function, and color theory as applied two-dimensions.
uggested corequisite: Art Hi 101. {Summer, Fall, Spring}

**22. Three-dimensional Design. (3)**
ie basic materials and mechanics of three-dimensional ructure, the ordering of forms and space, and application color theory to three dimensional design.
iggested corequisite: Art Hi 101. {Summer, Fall, Spring}

**17. Photography Fundamentals. (3)**
troduction to photographic vision and photographic chniques.
iggested corequisite: 121. {Summer, Fall, Spring}

**5. Drawing I. (3)**
rther development of basic materials and mechanics of awing. Emphasis on the development of descriptive and rceptual skills.
erequisites: 106, 121(or 123 prior to 1980) {Fall, Spring}

**7. Painting I. (3)**
roduction to painting with basic instruction in materials, hniques, composition, and color theory. Emphasis on development of descriptive and perceptual skills.
requisites: 106, 121 (or 123 prior to 1980); pre- or equisite: 205. {Fall, Spring}

**. Sculpture I. (3)**
oduction to sculptural tools, materials, and ideas.
requisites: 122 (or 123 prior to 1980); corequisite: 106. mmer, Fall, Spring}

**. Jewelry and Metalwork I. (3)**
handworking of various metals.
requisites: 122 (or 123 prior to 1980); corequisite: 106. ll, Spring}

**. Ceramics I. (3)**
oduction to basic ceramic techniques.
equisite: 122 (or 123 prior to 1980); corequisite: 106 13. {Summer, Fall, Spring}

**. Introduction to Printmaking. (3)**
oduction to the fundamental techniques, methods, and essive potentials of simple printmaking processes.
equisites: 106, 121 (or 123 prior to 1980); corequisite: or 207. {Fall, Spring}

**277. Graphic Design. (3)**
(Also offered as Journ 277.) Graphic design and communication.
Prerequisites: 106, 121 (or 123 prior to 1980) or 187. {Offered upon demand}

**287. Photography I. (3)**
Continuation of 187, with concentration on photographic techniques and the formal aspects of photographic vision.
Prerequisite: 187; pre- or corequisite 121, Art Hi 225. {Summer, Fall, Spring}

**293. Beginning Watercolor Painting. (3)** S. D. Smith
Emphasis on the landscape.
Prerequisites: 106 (or 205 prior to 1980), 207. {Fall, Spring}

**305. Drawing II. (3)‡‡**
Comprehensive and intensive investigation of the techniques and concepts of drawing.
Prerequisite: 205. {Fall, Spring}

**306. Drawing III. (3)‡‡**
Further development of the techniques and personal concepts of drawing.
Prerequisite: 305. {Fall, Spring}

**307. Painting II. (3)‡‡**
Comprehensive and intensive investigation of techniques, composition, color, and various painting concepts.
Prerequisite: 207; corequisite: 305. {Fall, Spring}

**308. Painting III. (3)‡‡**
Further development of the techniques and personal concepts of painting.
Prerequisite: 307; corequsite: 306. {Fall, Spring}

**309. Intermediate Watercolor Painting. (3)‡‡** S. D. Smith
Watercolor as an expressive medium. Emphasis on the landscape.
Prerequisite: 293. {Offered upon demand}

**313. Sculpture II. (3)‡‡**
Continuation of 213, with greater consideration of sculptural ideas and imagery.
Prerequisite: 213. {Fall, Spring}

**314. Sculpture III. (3)‡‡**
Further development of personal and technical resources of sculpture.
Prerequisite: 313. {Fall, Spring}

**335. Intaglio Printmaking. (3)‡‡** Abrams
Exploration of the aesthetic and technical aspects of intaglio printmaking.
Prerequisite: 274 or 287. {Fall, Spring}

**345. Serigraphy. (3)‡‡**
Techniques, methods, and aesthetic dimensions of screen printing.
Prerequisite: 274 or 287. {Fall, Spring}

**357. Jewelry and Metalwork II. (3)‡‡** Lewis
Development of the metalworking techniques with emphasis on the creative application of various skills.
Prerequisite: 257. {Fall, Spring}

**358. Jewelry and Metalwork III. (3)‡‡** Lewis
Further development of personal and technical resources.
Prerequsite: 357. {Fall, Spring}

**368. Ceramics II. (3)‡‡** Corbett, Paak
Experimental approaches to ceramics.
Prerequisite: 268. {Summer, Fall, Spring}

**369. Ceramics III. (3)‡‡** Corbett, Paak
Development of individual, technical and creative approaches today.
Prerequisite: 368. {Fall, Spring}

**374. Lithography I. (3)‡‡** Antreasian
Techniques and methods of lithography on stone.
Prerequisite: 274. {Fall, Spring}

**375. Lithography II. (3)‡‡** Sommers
Continuation of Lithography I, with emphasis on metal plate lithography and photographic reproduction processes.
Prerequsitie: 374 or 287. {Fall, Spring}

**386. Photography II. (3)‡‡** Barrow, Hahn, Lazorik, Widmer
Continuation of 287, with concentration on the development of personal vision.
Prerequisite: 287; pre- or corequisite: Art Hi 260. {Fall, Spring}

**387. Photography III. (3)‡‡** Barrow, Hahn, Lazorik, Widmer
Concepts of photography as applied to the development of personal vision. Students are encouraged to repeat this course with a different instructor.
Prerequisites: 386, Art Hi 260 or 426. {Fall, Spring}

**°389. Topics in Studio Art. (3)‡**
Concentrated practical and historical study of specified concerns in studio art.
Prerequisite: 15 hours of studio art, 6 hours of art history. {Offered upon demand}

**390. Elements of Filmmaking. (3)**
(Also offered as Film 390.) Basic conceptual and technical aspects of independent filmmaking. {Spring}

**405. Advanced Drawing. (3)‡** Abdalla, App, Ellis, Nadler, Wenger
Intensive work in drawing as an expressive and conceptual medium.
Prerequisite: 306. {Fall, Spring}

**407. Advanced Painting. (3)‡** Abdalla, App, Ellis, Nadler, Wenger
Concentrated investigation of painting materials, methods, and ideas.
Prerequisite: 308. {Fall, Spring}

***408. Advanced Landscape Painting. (3)‡‡** S. D. Smith
Landscape painting in various media.
Prerequsites: 305, 307. {Offered upon demand}

**413. Advanced Sculpture. (3)‡** Corbett, Mason
Intensive study of sculptural materials, methods and concepts.
Prerequisite: 314. {Fall, Spring}

**423. Theory and Aesthetics. (3)‡**
Advanced problems and practice in theory and perception relating to studio art.
Prerequisites: Art St 106, 121,122 (or 123 prior to 1980), Art Hi 150, 250; a minimum of 12 hours in one area of studio art; and an overall 3.0 G.P.A.

**°429. Undergraduate Topics in Studio Art. (1-6)‡**
Course work determined by specific student need or by the professor's current research. {Summer, Fall, Spring}

**457. Advanced Jewelry and Metalwork. (3)‡** Lewis
Experimental use of metal-working processes.
Prerequisite: 357. {Fall, Spring}

**468. Advanced Ceramics (3)‡** Corbett, Paak
Experimental approaches to the processes and materials of ceramics.
Prerequisite: 368. {Fall, Spring}

**474. Advanced Printmaking. (3)‡** Abrams, Antreasian
Concentrated exploration of various concepts and methods of printmaking. Course content varies.
Prerequisites: 356 or 374 (depending upon content). {Fall, Spring}

***475. The Lithography Workshop I. (2)** Adams
History and development of the professional lithography workshop; technical and administrative procedures in workshop operation. {Fall}

***476. The Lithography Workshop II. (2)** Adams
Continuation of 475. {Spring}

**487. Advanced Photography. (3)‡** Barrow, Hahn, Lazorik, Widmer
Advanced concepts of photography and the development of personal expression.
Prerequisites: 387, Art Hi 425, 426. {Fall, Spring}

**°493. Seminar in Studio Art. (3)‡**
{Fall, Spring}

**°495. Undergraduate Tutorial. (1-9)‡**
Advanced, individually directed study.
Prerequisites: Art 423, 3.2 overall G.P.A., portfolio.

**499. Senior Thesis. (3-6)** Honors Staff
Directed independent study in a field of special interest, culminating in an exhibition and written thesis. Open only by invitation to departmental honors candidates. {Fall, Spring}

Individually listed topics each semester.

° Open only to Undergraduates enrolled in the Preprofessional curricula of the College of Fine Arts. Students in art education curricula and majors in art enrolled in the College of Arts and Sciences may enroll with permission of the Department Chairperson.

***505. Graduate Drawing (3)‡**
Prerequisite: 405. {Fall, Spring}

***507. Graduate Painting. (3)‡**
Prerequisite: 407. {Fall, Spring}

***513. Graduate Sculpture (3)‡**
Prerequisite: 413. {Fall, Spring}

***529. Graduate Topics in Studio Art. (1-6)‡**
Courses work determined by specific student need or by the professor's current research. {Summer, Fall, Spring}

***557. Graduate Jewelry and Metalwork. (3)‡**
Prerequisite: 457. {Fall, Spring}

***568. Graduate Ceramics. (3)‡**
Prerequisite: 468. {Fall, Spring}

***574. Graduate Printmaking. (3)‡**
Prerequisite: 474. {Fall, Spring}

***587. Graduate Photography. (3)‡**
Prerequisite: 487. {Fall, Spring}

***593. Seminar in Studio Art. (3)‡**
{Fall, Spring}

***595. Graduate Tutorial. (1-9)‡**
Advanced, individually directed study. Open to graduate students only. {Fall, Spring}

***599. Master's Thesis. (1-6)**
{Fall, Spring}

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements. {Fall, Spring}

## ART HISTORY

**101. Art Appreciation.** [Principles of Art.]**(3)**
A beginning course in the fundamental concepts of the visual arts; the language of form and the mediums of artistic expression. Readings and slide lectures supplemented by discussion and museum exhibition attendance. {Summer, Fall, Spring}

**150.** [201, 202.]**History of Art.** [History of Art I, II.]**(3)**
Art of the West, from prehistory to the present. {Fall, Spring}

**151. Artistic Traditions of the Southwest. (3)**
(Also offered as Fine Arts 151.) Pre-Columbian, American Indian, Spanish Colonial, territorial, and modern traditions in art, dance, music, and theater. {Fall}

**153.** [203.]**Tribal Art.** [Ethnic Art.]**(3)**
Traditional arts of Africa, Oceania, and the Americas. {Spring}

**210. Introduction to Film. (3)** Jaffe
(Also offered as Film 210.) Survey and critical analysis of the development of the motion picture as an art form. Screening of major films. {Fall}

**211. Film Comedy. (3)** Jaffe
(Also offered as Film 211.) Forms, modes, and techniques of comedy in film. {Spring}

**215.** [430.]**Ancient Art.** [Greek and Roman Art.]**(3)** Clancy
Architecture, painting, and sculpture from 1800 B.C. to sixth century A.D. {Fall}

**220.** [440, 441.]**Medieval Art.** [Early Medieval and Byzantine Art; Romanesque and Gothic Art.]**(3)** Grizzard
Architecture, painting, and sculpture from Early Christian through Gothic. {Spring}

**230.** [451.]**Renaissance Art.** [Renaissance Art in Italy.]**(3)**
Painting, sculpture, and architecture of the Renaissance, with primary emphasis to Italy. {Fall}

**240.** [463.]**Baroque Art.** [17th Century Art in Europe.]**(3)**
Painting, sculpture and architecture from 1600 to 1750, with primary emphasis to the 17th century. {Spring}

**250.** [130.]**Modern Art.** [Contemporary Art.]**(3)** Cikovsky, Walch
Painting and sculpture from the Romantics to the present day. {Fall, Spring}

**260.** [225.]**History of Photography from 1827 to 1945. (3)**
History of photography with emphasis on early processes and artistic movements.
Pre- or corequisite: 150. {Fall, Spring}

**261. Ancient and Medieval Architecture. (3)** Mead
{Fall}

**262. Renaissance and Baroque Architecture. (3)** Mead
{Spring}

**270. American Art. (3)** Cikovsky, George
Painting and sculpture from the Colonial period to World War II. {Fall}

**280. Native American Art. (3)**
Prehistoric and historic art forms of North America.

**301-302. Interdepartmental Studies in the Culture of the United States. (1-3, 1-3)**
(See Am St 301-302.) {Offered upon demand}

**303. Asian Art.** [Chinese and Japanese Art.]**(3)**
{Offered upon demand}

**304. Beginning Museology. (3)** Brody
(See Anth 304.)

***326. History of the Film I. (3)** Jaffe
(Also offered as Film 326.) History of the motion picture from its beginnings to the era of sound. Screening and analysis of major films. {Fall}

***328. History of the Film II. (3)** Jaffe
(Also offered as Film 328.) History of the motion picture from the advent of sound to the present day. Screening and analysis of major films. {Spring}

**343. Pre-Columbian Architecture. (3)**
(Also offered as Arch 343.) North, South, and Mesoamerican pre-Columbian architecture, with emphasis on the cultural background of ancient civilization. {Offered upon demand}

**361. Architecture in Europe Since 1750.** [Architecture Since 1750.]**(3)** Mead
(Also offered as Arch 361.) {Fall}

***400. Museum Practices. (3)‡‡** Bryant
Practical and theoretical work in museum practices such as registration, conservation, exhibition, and cataloging works of art. {Offered upon demand}

***401. African and Oceanic Art. (3)**
Traditional media of painting, sculpture, and architecture, as well as such nontraditional media as mud sculpture, costuming and body decoration studied in their cultural contexts. {Fall, Spring alternate years}

***402. Native American Art I. (3)**
(Also offered as Anth 402.) Prehistoric and historic art forms of the Arctic Northwest coast and the eastern woodlands of North America. {Fall}

***403. Native American Art II. (3)**
(Also offered as Anth 403.) Prehistoric and historic art forms of the Plains, Southwest, and western regions of North America. {Spring}

***411. Pre-Columbian Art I.** [Pre-Columbian Art.]**(3)** M. E. Smith
The art of Mexico and Central America prior to the sixteenth century. {Fall}

***412. Pre-Columbian Art II. (3)** Clancy
Arts of the Andean region prior to the sixteenth century. {Spring}

***420. History of Graphic Arts I. (3)**
Printmaking from the thirteenth century to the nineteenth century. {Fall}

***421. History of the Graphic Arts II. (3)**
Printmaking since 1800. {Spring}

***425. 19th-Century Photography. (3)** Newhall
Historical development and aesthetic character of photography in the nineteenth century. {Fall}

***426. 20th-Century Photography. (3)** Newhall
Historical development and aesthetic character of photography in the twentieth century. {Spring}

***428. Topics in Film History. (3)‡** Jaffe
(Also offered as Film 428.) Issues and theories of the development of cinematic art. {Fall}

**429.** [494.]**Topics in Art History. (1-3)‡**
Course work determined by specific students request or by the professor's current research. {Offered upon demand}

***449.** [471.]**Art of Spain.** [Hispanic Art.]**(3)** Grizzard
Survey of Hispanic art in Europe. {Fall}

***450. Spanish Colonial Art. (3)** Grizzard
Architecture, sculpture, and painting in the period of Spanish colonization and the relation of these art forms to both the Spanish and the native Indian traditions. {Spring}

***452. Renaissance Art in Northern Europe. (3)** Rodee
Northern European art from the late fourteenth century through the sixteenth century. {Fall}

***460. Seminar in Museology and Museography. (3)** Brody
(Also offered as Anth 460.) Practical and theoretical work in specific museum problems.
Prerequisite: Anth 304 or Art Hi 400, or permission of instructor.

***462. Architectural Theory and Criticism. (3)** Mead
Theories of the twentieth century's architects and architectural groups—criticism and evaluation of current modern trends in architecture. {Spring}

***464. 18th-Century Art in Europe. (3)**
{Offered upon demand}

***472. American Art: 1675-1875.** [Art of the United States.]**(3)** Cikovsky
Painting and sculpture from 1675-1875. {Fall}

***477. American Architecture. (3)** Mead
History of American architecture from the seventeenth century to World War II. {Offered upon demand}

***479. American Art: 1876-1940. (3)** Cikovsky
Painting and sculpture from the Centiennial Exhibition to World War II. {Spring}

***481. 19th-Century Art. (3)** Rodee
Painting and sculpture from Romanticism through Post-Impressionism. {Fall}

***482. Early 20th-Century Art. (3)** Walch
Painting and sculpture from 1900 to 1940. {Fall}

***483. Latin American Art of the 19th and 20th Centuries (3)**
Prerequisite: 250 or equivalent. {Offered upon demand}

**490. Interdepartmental Proseminar. (3)** Staff
(See F.A. 490.) {Offered upon demand}

***491. Late 20th-Century Art. (3)** Cikovsky, Walch
Painting and sculpture, 1940 to the present. {Spring}

***492. Art Critcism. (3)**
Principles of criticism in the visual arts with emphasis on critical approaches to contemporary art.
Prerequisite: 6 hours upper division in art history, literature and/or philosophy. {Offered upon demand}

**496. Undergraduate Tutorial. (3)‡**
Individual investigation or reading under faculty direction.
Prerequisite: 6 hours upper-division art history. {Fall, Spring}

**499. Senior Thesis. (3-6)** Honors Staff
Directed independent study in a field of special interest culminating in a written thesis. Open only by invitation to departmental honors candidates. {Fall, Spring}

***500. Historiography and Connoisseurship. (3)** Wall, George
{Fall}

***501. Interdepartmental Seminar in the Culture of United States. (3)**
(See Am St 501.) {Offered upon demand}

***529.** [594.]**Topics in Art History. (1-3)‡**

***551-552. Problems. (2-3, hrs. each semester)**
Maximum 6 hours. {Fall, Spring}

***559. Seminar in Native American Art. (3)‡** Brody
Prerequisites: 402 and/or 403. {Offered upon demand}

***560. Seminar in Pre-Columbian Art or African and Oceanic Art. (3)‡** Clancy, M.E. Smith
Prerequisites: 401, 411, 412 or their equivalents, depending upon content, and reading knowledge of Spanish. {

***561. Seminar in Ancient and Medieval Art. (3)‡**
Prerequisites: 215 or equivalent depending upon content. {Offered upon demand}

***571. Seminar in Renaissance and Baroque Art. (3)‡**
Prerequisites: 230, 240, 452, 464 or equivalent, depending upon content. {Offered upon demand}

***572. Seminar in the Art of the United States. (3)‡** Cikovsky, George
Prerequisite: 472, 477 or 479, depending upon content. {Spring}

***580. Seminar in Spanish Colonial Art. (3)‡** Grizzard
Prerequisites: 450 and reading knowledge of Spanish. {Fall}

***581. Seminar in 19th-Century Art. (3)‡** Newhall, Rodee
Prerequisite: 481. {Fall, Spring}

***582. Seminar in 20th-Century Art. (3)‡** Adams, Cikovsky, Newhall, Walch
Prerequisite: 482 or 491. {Offered upon demand}

***592. Seminar in Art Since 1950. (3)‡** Adams, Barrow, Cikovsky, Walch
Prerequisite: 491 or equivalent. {Fall, Spring}

**599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements. {Fall, Spring}

**699. Dissertation. (3-12 hrs. per semester)**
See the graduate Programs Bulletin for total credit requirements. {Fall, Spring}

# ARTS AND SCIENCES COOPERATIVE PROGRAM

Connie Theye, Director
EC 158, 277-6568

**05. Arts and Science Co-op Work Phase. (0)** Theye
This course is merely a mechanism for registered work phase students from College of Arts and Science as full time students while working.

**09. Evaluation of Arts and Science Co-op Work Phase I. (-3)**
This course provides the means for obtaining one hour of credit for co-op work experience. Students must submit a report to their departmental adviser.

**0. Evaluation of Arts and Science Co-op Work Phase II. (-3)**
prerequisite.

**9. Evaluation of Arts and Science Co-op Work Phase III. (-3)**
prerequisite.

**0. Evaluation of Arts and Science Co-op Work Phase IV. (3)**
prerequisite.

**9. Evaluation of Arts and Science Co-op Work Phase V. (3)**
prerequisite.

**). Evaluation of Arts and Science Co-op Work Phase VI. (3)**
prerequisite

# ASIAN STUDIES

Marlene McDermott, Chairperson
Humanities 553, 345, 277-2172

**COMMITTEE IN CHARGE:**

**PROFESSORS:**

Marlene McDermott, Ph.D., (Philosophy)
Yuk Ikle, Ph.D., (History)
Sorenson, Ph.D., (Political Science)

**ASSISTANT PROFESSOR:**

Jess Sebring, Ph.D., (Anthropology)

**MINOR STUDY**
Offered.

**UNDERGRADUATE MINOR**
Interdepartmental minor in Asian Studies shall consist of at least 18 hours in courses selected from the approved list below, including at least 3 hours in history, 3 hours in philosophy, and 3 hours in geography. No more than 9 hours may be selected in any one department, and courses used to satisfy the major field may not be applied to the minor. The following courses have been approved (see appropriate departmental listings for course descriptions and prerequisites):

Anthropology 321; Art History 303; Geography 336, 337; History 251, 252, 350, 351, 352, 354, 355, 356, 358, 359, 370, 371, 456, plus 495 and 496 when topic is appropriate; Chinese 101, 102, 201, 202; Philosophy 263, 334, 335, 336, 337, 348, plus 441 and 442 when topic is appropriate, 453; Political Science 450 English 300 when topic is appropriate.

# BIOLOGY

James S. Findley, Chairperson
Castetter Hall 173A, 277-3411

**PROFESSORS:**

Clifford S. Crawford, Ph.D., Washington State University
William G. Degenhardt, Ph.D., Texas A & M University
Donald W. Duszynski, Ph.D., Colorado State University
James S. Findley, Ph.D., University of Kansas
James R. Gosz, Ph.D., University of Idaho
Robert O. Kelley, Ph.D., University of California (Berkeley)
David E. Kidd, Ph.D., Michigan State University
J. David Ligon, Ph.D., University of Michigan
William C. Martin, Ph.D., Indiana University
Loren D. Potter, Ph.D., University of Minnesota
Marvin L. Riedesel, Ph.D., State University of Iowa
Robert E. Waterman, Ph.D., University of Washington
John A. Wiens, Ph.D., University of Wisconsin (Madison)

**ASSOCIATE PROFESSORS:**

J. Scott Altenbach, Ph.D., Colorado State University
Oswald G. Baca, Ph.D., University of Kansas
Larry L. Barton, Ph.D., University of Nebraska
Earl W. Bourne, Ph.D., Oklahoma State University
Rex G. Cates, Ph.D., University of Washington
Gordon V. Johnson, Ph.D., University of Arizona
William W. Johnson, Ph.D., University of Minnesota
Paul Kerkof, Ph.D., University of California (Berkeley)
Tokio Kogoma, Ph.D., University of Tokyo
Randy Thornhill, Ph.D., University of Michigan
John L. Trujillo, Ph.D., University of Texas Medical Branch (Galveston)

**ASSISTANT PROFESSORS:**

Douglas E. Caldwell, Ph.D., Michigan State University
Evelyn P. Ewing, Ph.D., University of Kansas
Manuel C. Molles, Ph.D., University of Arizona
Frederick W. Taylor, Ph.D., University of Chicago
Eric C. Toolson, Ph.D., Arizona State University
Kathryn G. Vogel, Ph.D., University of California (Los Angeles)
Terry L. Yates., Ph.D., Texas Tech University

**LECTURER:**

Sandra H. Ligon, M.S., University of New Mexico

**ADJUNCT PROFESSORS:**

Roger Conant, Sc.D., University of Colorado
Eugene W. Rypka, Ph.D., Stanford University
Norman J. Scott, Ph.D., University of Southern California

**RESEARCH ASSISTANT PROFESSOR:**

In-Cheol Kim, Ph.D., University of British Columbia

**PROFESSORS EMERITI:**

Howard J. Dittmer, Ph.D., State University of Iowa
Martin W. Fleck, Ph.D., University of Colorado
Clarence C. Hoff, Ph.D., University of Illinois
William J. Koster, Ph.D., Cornell University

Explanation of footnotes not indicated will be found on p. 78.

**MAJOR STUDY**

All majors in biology must complete sections A; B, C, and D.
A. Biol 121L-122L, 221, 222, and 429.
B. Option of one of the three following tracks:
   1. Microbiological: Biol 350L, 460L, plus Biol 260L or 371L or 386L.
   2. Botanical: Biol 260L, 478L, plus Biol 350L or 371L or 386L.
   3. Zoological: Biol 371L or 386L, 435L, plus 260L or 350L.
C. Biology electives to total 37 hours of biology (Biol 100, 110, 111, 123L, 136, 139L, and 239L will not be allowed for biology majors).
D. Supportive courses:
   Math 182-183 (or 180-181, or 162); Physics 151 and 152; Chem 121L-122L (or 131L-132L) and 301-303L (or 212).
   (for those interested in microbiology, physiology, or medicine, Chem 301-303L and 302-304L are recommended.)

Grades of C or better are required in all of the above courses.

**MINOR STUDY**

Biol 121L-122L, 221, 222, and 6 additional hours of biology. (Biol 100, 110, 111, 123L, and 499 will not be allowed for biology minor). Grades of C or better are required in biology courses used for a minor.

**MINOR STUDY IN PALEOECOLOGY**

See p. 158.

**PROFESSIONAL CURRICULA**

Lists of suggested electives for students pursuing careers in specific areas of biology may be obtained in the departmental office. Faculty advisers are available for students wishing to pursue various specialities or professional curricula.

**CURRICULA PREPARATORY TO HEALTH SCIENCES**

See p. 65.
Note: Credit will not be allowed for 136-139L and 237-247L or 238-248L; nor for 110-111 and 121L-122L or 123L; nor for 239L and 350L.

**CURRICULUM**

**100. Natural Science. (4)** Kidd
For Students who score 17 or below in Natural Science in the ACT, or who are admitted with a Natural Science deficiency. 1 lecture, 3 1-hour discussion/laboratory sessions. Cannot be used for credit toward the biology major or minor. {Fall, Spring}

**110. Life Science for Non-Majors. (3)** Degenhardt
Plants as producers and animals as consumers. Basic concepts, human application, and ecology are emphasized rather than chemical and molecular aspects. 3 lectures. {Fall}

**111. Life Science for Non-Majors. (3)** Degenhardt
Continuation of 110. Major topics are reproduction and development, heredity, evolution, plant and animal diversity, and ecology.
Prerequisite: 110. 3 lectures. {Spring}

**121L. Principles of Biology. (4)** Altenbach, Toolson
Impact biology, biological chemistry, molecular genetics, Mendelian inheritance, embryology. Emphasis on development of concepts. 3 lectures, 3 hrs. lab. {Summer, Fall, Spring}

**122L. Principles of Biology. (4)** Altenbach, Toolson
Population genetics, evolution, ecology, behavior, plant and animal physiology, and survey of diversity of organisms. Emphasis on development of concepts.
Prerequisite: 121L or permission of instructor. 3 lectures, 3 hrs. lab. {Summer, Fall, Spring}

**123L. Biology for Health Related Sciences. (4)** Kidd
Principles of cell biology, genetics, evolution, and social biology.
Restricted enrollment: only those students who intend to apply for admittance to the College of Nursing and Pharmacy. 3 lectures, 3 hrs. lab. {Spring}

**136. Human Anatomy and Physiology for Non-Majors. (3)** Staff
Fundamental concepts of human physiology stressing the relationship of structure to function at the cellular and gross anatomical levels. May be taken independently of 139L. Not accepted toward a biology major. 3 hrs lecture. {Fall, Spring}

**139L. Human Anatomy and Physiology Laboratory for Non-Majors. (1)** Staff
Laboratory exercises, demonstrations and dissection in anatomy and physiology.
Pre- or corequisite: 136. 3 hrs. lab. {Fall, Spring}

**221. Introductory Genetics. (3)** W. Johnson, Ewing, Kogoma
Structure, function, and transmission of hereditary factors. May be taken with or independently of 223L.
Prerequisites: 121L and 122L. {Fall, Spring}

**222. Evolution and Ecology. (3)** Molles, Taylor, Thornhill
Evolutionary processes; population, community, and ecosystem ecology.
Prerequisite: 221. 3 hrs. lecture. {Fall, Spring}

**223L. Introductory Genetics Laboratory. (1)** W. Johnson
Genetic principles using the fruit fly and lower organisms.
Pre- or corequisite: 221. 3 hrs. lab. {Fall, Spring}

**237. Human Anatomy and Physiology I. (3)** Bourne, Yates
An integrated study of human structure and functions of the skeletal, muscular, nervous, and cardiovascular systems.
Prerequisites: 121L or 123L and 4 hrs. of general chemistry; corequisite: 247L. 3 hrs. lecture. {Fall}

**238. Human Anatomy and Physiology II. (3)** Bourne, Yates
Continuation of 237. Cardiovascular, respiratory, digestive, excretory, reproductive, and endocrine systems.
Corequisite: 248L. 3 hrs. lecture. {Spring}

**239L. Microbiology for Health Sciences. (4-5)** Baca
Introduction to microbiology with emphasis on principles of infection and immunity.
Prerequisites: 121L or 123L and 4 hours of chemistry with Chem 102L not accepted. Not accepted toward a biology major. 3 lectures; 4 hrs. lab required for pharmacy students, 3 hrs. lab required for nursing and dental hygiene/assisting students. {Summer, Fall, Spring}

**247L. Human Anatomy and Physiology Laboratory I. (1)** Staff
Laboratory work using cadavers. Anatomy stressed with appropriate physiological work. Topics integrated with 237. 3 hrs lab. {Fall}

**248L. Human Anatomy and Physiology Laboratory II. (1)** Staff
Continuation of Biol 247L. Topics integrated with 238. 3 hrs. lab. {Spring}

**260L. Introductory Botany. (4)** Cates
Emphasis on energy flow in plants; evolution of complexity, specialization and plant diversity; correlation of structure with function; interaction of the biotic and abiotic environment; plant adaptations.
Prerequistes: 121L and 122L or permission of instructor. 2 lectures, 4 hrs. lab. {Spring}

**290L. Biological Lab Techniques. (4)** Duszynski
Preparation of cells and tissues for microscopic examination using paraffin and plastic methods. Other techniques may also include: histochemistry, basic photography, and fermentation studies.
Prerequisites: 121L and 122L or permission of instructor. 1 lecture, 5 hrs. lab. {Fall}

**312. Developmental Biology. (3)** Trujillo
A survey of the basic mechanism of organismic development from both descriptive and experimental points of view.
Prerequisites: 121L, 122L, and Chem 212 or 301. 3 hrs. lecture. {Fall}

***324. Biochemistry. (3)**
(See Chem 423.) {Spring}

****350L. General Microbiology. (5)** Barton, Caldwell
Anatomy, physiology, and ecology of microorganisms. Principles of bacterial techniques, host-parasite relationships, and infection and immunity.
Prerequisite: 221 and Chem 301; corequisite: Chem 302. 3 lectures, 6 hrs. lab. {Fall, Spring}

**351. Introductory Molecular Biology. (3)** Kogoma
Interpretation of biological activities in terms of molecules, with emphasis on interactions of molecules in cells.
Prerequisite: 350L; Physcs 151-152 recommended. 3 lectures. {Fall}

**363L. Flora of New Mexico. (4)** Martin
Identification, classification, and nomenclature of vascular plants. Field trips required.
Prerequisite: 222 or permission of instructor. 3 lectures, 3 hrs. lab. {Fall}

**370F. Invertebrate Marine Laboratory. (1)** Duszynski
Major marine invertebrates inhabiting intertidal areas of the Gulf of California. A one-week field trip to the Gulf and lab fee required.
Pre- or corequisite: 371L. {Fall}

**371L. Biology of the Invertebrates. (5)** Duszynski
Survey of the major invertebrate groups with emphasis on evolutionary and ecological relationships, and the correlation of structure with function.
Prerequisite: 222. 3 lectures, 4 hrs lab. {Fall}

**372. Desert Biology. (3)** Crawford
Origin and evolution of deserts, adaptations of desert biota, organization and dynamics of desert communities.
Prerequisites: 121L and 122L or permission of instructor. 2 lectures. {Fall}

**379. Biological Conservation. (3)** Kidd
The protozoa and worms important in human and veterinary medicine. Emphasis on life histories, epidemiology, and ecology of parasites with laboratory practice in identification and experimentation.
Prerequisite: 371L. 2 lectures, 4 hrs. lab. {Spring}

**382L. Parasitic Protozoa and Helminths. (4)** Duszynski
The protozoa and worms important in human and veterinary medicine. Emphasis on life histories, epidemiology, and ecology of parasites with laboratory practice in identification and experimentation.
Prerequisite: 371L. 2 lectures, 4 hrs. lab. {Spring}

**386L. General Vertebrate Zoology. (4)** Findley
Ecology, behavior, sociology, adaptations, and evolution of the vertebrates.
Prerequisite: 222. 3 lectures, 3 hrs. lab. {Fall}

**400. Senior Honors Thesis. (1-3)** Taylor
Original theoretical and/or experimental work under supervision. Work for the thesis is carried on throughout the senior year.

***401L. Biometrics. (4)** Gosz
Collection, handling, and statistical treatment of biological data.
Prerequisites: 20 hrs. of Biol and Math 121 or 150 or 162 or 180 and 181. 2 lectures, 6 hrs. lab. {Fall}

**402. Special Topics in Biology. (1-3)** Staff
Prerequisites: senior status, high scholastic standing, and permission of instructor. {Summer, Fall, Spring}

***403. Ecosystem Ecology. (3)** Gosz
Detailed study of the structure and function of diverse ecological systems.
Prerequisite: 222. {Spring}

***405. Scientific Publication. (2)** Wiens
Organization, writing, illustrating, and publishing scientific papers and oral presentation of research; workshop format.
Prerequisites: 16 hrs. of biology and permission of instructor. {Fall}

***406. Insect Ecology. (3)** Taylor
Physiology and behavior of insects as adaptations to their environments.
Prerequisites: 222 and 414L or permission of instructor. {Spring}

**408L. Desert Invertebrates. (4)** Crawford
Biology of desert invertebrates with emphasis on their roles in and adaptations to xeric ecosystems. Credit not allowed for both 408L and 508L.
Prerequisite: 371L. 2 lecture, 3 hrs. lab. {Spring}

***411L. Ecology of Populations. (4)** Taylor
Basic concepts in the evolution and ecology of populations.
Prerequisites: 222, Math 162 or 180-181. 3 hrs lecture, 3 hrs. lab. {Fall}

***412L. Descriptive and Compartive Embryology of the Vertebrates. (4)** Bourne
Prerequisite: 221 or permission of instructor. 3 lectures, 4 hrs. lab. {Fall}

***414L. General Entomology. (4)** Crawford
Biology and classification of the insects.
Prerequisite: 371L or permission of instructor. 2 lectures, 4 hrs. lab. {Fall}

***416L. Histology. (5)** Bourne
Microscopic structure of vertebrate tissues, emphasizing correlation of structure and function.
Prerequisite: 221. 3 lectures, 4 hrs. lab. {Spring}

***418. Population Genetics. (3)** Ewing
Mechanisms for the maintenance of genetic variation in natural populations: descriptive population genetics; forms of balancing selection; population structure and size; multilocus questions; neutrality and mutation, migration, and finite size.
Prerequisites: 221, 222, calculus. {Fall}

***421L. Comparative Vertebrate Anatomy. (5)** Altenbach
Prerequisites: 222 and 386L or permission of instructor. 2 lectures, 6 hrs. lab. {Spring}

***423. Biological Adaptation. (3)** Staff
Adaptations of plants and animal to light.
Prerequisites: 222 and junior status.

***424. Biological Adaptation. (3)** Staff
Adaptations of plants and animals to temperature and water.
Prerequisites: 222 and junior status.

***425. Molecular Genetics. (3)** Kogoma
Molecular biology of the gene. May be taken with or independently of 426L.
Prerequisite: 351 or permission of instructor.

***426L. Molecular Genetics Laboratory. (1)** Kogoma
Experiments with bacteria and bacteriophages to understand mutation, recombination, complementation, etc.
Pre- or corequisite: 425. 3 hrs. lab.

***427. Advanced Genetics. (3)** W. Johnson
Consideration of the evolution and integration of genetic systems and the genetic component of certain complex behavioral and developmental traits.
Prerequisite: 221.

***428. Human Heredity. (3)** W. Johnson
Genetic principles applied to man.
Prerequisite: 221 {Fall}

***429. Cell Biology.** [Cellular Physiology and Biochemistry **(4)** Kerkof
Life processes with emphasis on relationships of structure and function at organelle and molecular level.
Prerequisites: 14 hrs. of biology and Chem 212 or 303L. 4 lectures. {Fall, Spring}

***430. Vertebrate Physiology. (4)** Riedesel
Functions and structures with emphasis on fundamental physiological processes and mechanisms at cell and system levels.
Prerequisite: 14 hrs. of biology and 429, Chem 423 Chem 481-482. {Spring}

***431L. Vertebrate Physiology Laboratory. (1)** Riedesel
Independent research projects in small student groups with demonstration of competence in operation of equipment and data interpretation.
Pre- or corequisites: 430 and permission of instructor. hrs. lab.

***433. Molecular Biophysics. (3)** Beckel, Kogoma
(Also offered as Physcs 433.) Physio-chemical properties and the dependence of biological function on these properties for amino acids, proteins, nucleotides, DNA, and RN {Offered upon demand}

***435L. Animal Physiology. (4)** Altenbach, Toolson
The function of organ systems in animals, emphasizing neuromuscular, cardiovascular, gastrointestinal, and renal physiology.
Prerequisites: 429 or permission of instructor. 3 hrs. lecture, 3 hrs. lab. {Fall}

***439L. Cell Biology Laboratory.** [Methods in Cell Biology **(3)** Kerkof
Laboratory experience with various methods and techniques used in cell biology.
Pre- or corequisites: 429. 1 hr. lecture , 5 hrs. lab.

***440L. The Soil Ecosystem. (4)** G. Johnson
Interrelationship between the abiotic and biotic factors in soils; influence of soils on above-ground biota.
Prerequisites: 222 and Chem 121L-122L or 131L-13 {Offered upon demand}

***443L. Comparative Physiology. (4)** Toolson
Comparative treatment of physiological processes in animals, with emphasis on osmoregulation, metabolism, circulation, and thermobiology.
Pre- or corequisite: 429 or permission of instructo lectures, 3 hrs. lab. {Spring}

***450. General Virology. (3)** Baca, Kogoma
Structure, properties, and chemistry of viruses; virus-interactions, multiplication, serological properties, use probes in molecular biology; effects of physical and chemical agents, classification.
Prerequisites: Chem 423 or Biol 350 or 429 or 351. {F

***451. Microbial Ecology. (3)** Caldwell
Role of microorganisms in terrestrial and aquatic ecosystems. Emphasis on biogeochemistry and nutrient cycli
Prerequisites: Chem 423 or 212. 3 lectures. {Fall}

***452. Vertebrate Endrocrinology (3)** Trujillo
An advanced course on hormones, their synthesis mechanisms of action in endocrine physiology biochemistry.
Prerequisites: 429, Chem 423 or permission of instru 3 lectures. {Fall}

***454L. Pathogenic Bacteriology. (5)** Baca
The properties and characteristics of disease-producing bacteria and their relationship to disease.
Prerequisite: 350L; 456 recommended. 3 lectures, 6 hrs. lab. {Spring}

***455. Ethology: Animal Behavior. (3)** Ligon
A survey of behavior patterns in animals, with emphasis on adaptive significance.
Prerequisite: 222. {Spring}

***456. Immunology. (3)** Vogel
Immunoglobulin structure, anitigen-antibody reactions, immunity and hypersensitivity, transplantation and auto-immune diseases.
Prerequisites: 239L or 350L, Chem 302-304L; recommended: 429 and Chem-Med Sci 423. 3 lectures. {Fall}

***457L. Ethology Laboratory: Animal Behavior. (1)** Ligon
Special laboratory and field projects in animal behavior.
Pre- or corequisite: 455. 3 hrs. lab. {Spring}

***458L. Immunology Lab Techniques. (2)** Staff
Laboratory preparation, detection, and measurement of anitibodies.
Pre- or corequisite: 456. 4 hrs. lab. {Offered upon demand}

***460L. Microbial Physiology** [Physiology of Bacteria.] **(4)** Barton, Caldwell
Physiological and biochemical activities of bacteria and fungi with emphasis on cell energetics.
Prerequisite: 350L. 3 lectures, 3 hrs. lab {Spring}

***465. Sociobiology and Evolutionary Ecology. (3)** Thornhill
Evolutionary and social biology; speciation, adaptation, population ecology.
Prerequisite: 222. {Fall}

***466L. Sociobiology and Evolutionary Ecology Project. (2)** Thornhill
Special lab, field or literature projects.
Pre- or corequisite: 465. 6 hrs. lab (arranged). {Fall}

***467. Evolutionary Plant Ecology. (3)** Cates
An evolutionary approach to the study of adaptation in plants. Particular emphasis will be given to life history strategies, coevolutionary biology, and physiological ecology of plants.
Prerequisite: 222.

***470L. Stream Ecology.** [Ecology of Flowing Water.] **(4)** Molles
Ecology of rivers, streams, and spring runs. Particular emphasis will be given to invertebrates and fishes of flowing waters. All-day and one or more overnight field trips required.
Prerequsite: 222. 3 lectures, 3 hrs. lab. {Fall}

***473L. General Mycology. (4)** Barton, Martin
A general study of the fungi with emphasis on classification, physiology, biochemistry, and the impact of these organisms on human affairs.
Prerequisite: 222. 2 lectures, 6 hrs. lab.

***474L Plant Anatomy. (4)** Martin
Structure of vascular plants.
Prerequisite: 222. 2 lectures, 4 hrs. lab.

***478L. Plant Physiology. (4)** G. Johnson
Nutrition, metabolism, and growth of higher plants.
Prerequisite: 260L or permission of instructor; Chem 301-303L recommended. 3 lecture, 3 hrs. lab. {Spring}

***483. Analysis of Development. (3)** Trujillo
Advanced study of basic problems in developmental biology, with major emphasis on interacting systems approached at several levels from molecular to morphological; genetic and metabolic control of the interacting systems.
Prerequisites: 221, 312, 429, and permission of instructor. {Spring}

***484. Biology of Water Pollution. (3)** Kidd
Application of ecosystem and community diversity concepts to water pollution problems.
Prerequisite: permission of instructor. {Spring}

***485L. Biology of Water Pollution Laboratory. (1)** Kidd
Techniques of monitoring aquatic habitats are stressed.
Pre- or corequisite: 484; permission of instructor. {Spring}

***486L. Ornithology. (4)** Ligon
Classification phylogeny, natural history, and literature of birds. Early morning field trips required.
Prerequisite: 386L or permission of instructor. 3 lectures, 3 hrs. lab. {Fall}

***487L. Ichthyology. (4)** Molles
Classification, phylogeny, natural history, and literature of fishes. All-day field trips and one or more overnight field trips required.
Prerequisite: 222. 3 lectures, 3 hrs. lab. {Fall}

***488L. Herpetology. (4)** Degenhardt
Classification, phylogeny, natural history, and literature of reptiles and amphibians. All-day field trips and one or more overnight field trips required.
Prerequisite: 222. 2 lectures, 6 hrs. lab. {Spring}

***489L. Mammalogy. (4)** Findley, Yates
Classification, phylogeny, natural history, and literature of mammals. All-day field trips and one or more overnight field trips required.
Prerequisite: 386L. 3 lectures, 3 hrs. lab.

***490. Principles of Systematic Biology. (3)** Yates
Systematic theory and philosophy applied to kinds, diversity, and relationships among organisms. Phenetic, cladistic, and numerical techniques as applied to systematic studies. Levels and methods of biological classification.
Prerequisite: 222. {Spring}

***491L. Radiobiology. (4)** G. Johnson
Properties of radiation; principles, theory, and use of detection and counting instruments; radioisotopes as tracers in biological experiments.
Prerequisties: 429, Physcs 151-153L; one year of organic chemistry recommended. 2 lectures, 6 hrs. lab. {Fall}

***492. Radiobiology. (3)** Kerkof
Interaction of radiation with matter; biological effects of radiation; radiation syndrome, relative radiosensitivity of cells, organs, and organisms; physics and practical applications of radiation.
Prerequisite: 491L; pre- or corequisite: Physcs 152-154L; 1 year of organic chemistry recommended. {Spring}

***493L. Advanced Radiobiology Laboratory. (1-3)** G. Johnson
Advanced radioisotope methodology, independent research in radiobiology.
Corequisite: 492 and permission of instructor. {Spring}

***494. Geographical Ecology. (3)** Findley
The role of ecologic and evolutionary processes in determining the geographic pattern of biological communities.
Prerequisites: 221-222 or equivalent background in evolution and ecology. {Spring}

***495. Topics on Limnology-Oceanography. (3)** Molles
Biological, physical, and chemical interactions in standing water ecosystems.
Prerequisites: 222, 1 year of physics or chemistry. 3 lectures. {Spring}

**496F. Advanced Marine Biology.(3)‡** Duszynski, Molles
Field and laboratory studies of marine organisms. Required 1-week field trip to a marine environment.
Prerequisite: 222 and permission of instructor; recommended: 370F, 371L, 495. Also offered as 596F for graduate credit. {Spring}

**499. Undergraduate Problems. (1-3)**
Junior or senior status and permission of instructor required. Maximum of 2 hrs credited towards a biology major. Credit not allowed toward a biology minor.

***500. New Graduate Student Seminar. (1)** Staff

***502. Special Topics in Biology. (1-3)‡**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***504. Environmental Physiology. (3)** Riedesel
Prerequisites: 430 and permission of instructor. {Fall}

***508L. Desert Invertebrates. (4)** Crawford
Credit not allowed for both 408L and 508L.
Prerequisite: 371L. 2 lectures, 3 hrs. lab. {Spring}

***510. Genetics of Speciation. (3)** Ewing
Prerequisite: 221. {Spring}

***515. Comparative Vertebrate Physiology. (3)** S. Wood
(Also offered as Med Sci 619.)
Prerequisites: biochemistry, physiology, or permission of instructor. {Spring}

***520.** [420.] **Energy and Metabolism.** [Biochemistry of the Nervous System.] **(3)** Omdahl, Trujillo
(Also offered as Med Sci 520.)
Prerequisite: Biol 429 or Chem 423. {Spring}

***551. Problems. (2-3)††**

***552L. Advanced Parasitic Protozoology. (4)** Duszynski
Prerequisites: 371L, 416L, or permission of instructor. 2 lectures, 4 hrs. lab. {Spring}

***554L. Mammalian Ecology. (4)** Findley
Prerequisite: 489L or permission of instructor. 3 lectures, 3 hrs. lab. {Spring}

***555L. Environmental Microbiology. (4)** Caldwell
Pre- or corequisite: 451. 1 lecture, 9 hrs. lab. (Saturday) {Fall}

***557. Advanced Population Ecology. (3)** Taylor
Prerequisites: 411L and Math 163 or equivalent. 3 lectures. {Spring}

***559. Ecology of Natural Communities. (4)** Wiens
Prerequisites: 222, graduate status, and permission of instructor. Field trips required. 3 lectures, 4 hrs. lab. {Spring}

***563L. Advanced Plant Taxonomy. (4)** Martin
Prerequisites: graduate status and permission of instructor. 2 lectures, 6 hrs. lab. {Spring}

***567L. Experimental Embryology. (4)** Staff
Prerequisite: 483.

***571L. Physiological Plant Ecology. (4)** Gosz
Prerequisites: 478L. 3 lectures, 3 hrs. lab. {Offered upon demand}

***573L. Plant Ecology of North American Forests and Tundra. (4)** Potter
Prerequisites: 222 and 363L or permission of instructor. 3 lectures, 3 hrs. lab. {Fall}

***574L. Plant Ecology of North American Deserts and Grasslands. (4)** Potter
Prerequisites: 222 and 363L or permission of instructor. 3 lectures, 3 hrs. lab. {Spring}

***593. Plant Mineral Metabolism. (2)** G. Johnson
Prerequisite: 478L, 2 lectures. {Fall}

***594L. Plant Mineral and Water Relations Laboratory. (2)** G. Johnson
Pre- or corequisite: 593 or permission of instructor. 6 hrs. lab. {Fall}

***595. Computer Modeling of Environmental Systems. (3).** Caldwell
Prerequisite: knowledge of Fortran; Math 316 recommended. {Spring}

***596F. Advanced Marine Biology. (3)‡** Duszynski, Molles
Also offered as 496F for undergraduate credit. {Spring}

***599. Master's Thesis.(1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***651F. Advanced Field Biology. (4-8)**
Approval of Committee on Studies required.

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Program Bulletin for total credit requirements.

# BUSINESS

See Management, Robert O. Anderson, School of.

# BUSINESS EDUCATION

See Education, Secondary.

# CHEMICAL ENGINEERING

See Engineeing, Chemical.

# CHEMISTRY

Riley Schaeffer, Chairperson
Clark Hall 105, 277-2821

**PROFESSORS:**

Guido Herman Daub, Ph.D., University of Wisconsin
Roy Dudley Caton, Ph.D., Oregon State University
Ulrich Hollstein, Ph.D., University of Amsterdam
Riley Schaeffer, Ph.D., University of Chicago
Robert Edwin Tapscott, Ph.D., University of Illinois
David Lee Vander Jagt, Ph.D., Purdue University

**ASSOCIATE PROFESSORS:**

Fritz Schreyer Allen, Ph.D., University of Illinois
William Fletcher Coleman, Ph.D., Indiana University
Richard Willis Holder, Ph.D., Yale University
William Morris Litchman, Ph.D., University of Utah
Donald Reed McLaughlin, Ph.D., University of Utah
Cary Jacks Morrow, Ph.D., Tulane University
Thomas Michael Niemczyk, Ph.D., Michigan State University
Robert Treat Paine, Jr., Ph.D., University of Michigan
Eleftherios Paul Papadopoulos, Ph.D., University of Kansas
Su-Moon Park, Ph.D., University of Texas at Austin
Edward Albert Walters, Ph.D., University of Minnesota

**ASSISTANT PROFESSORS:**

Jon R. Maple, Ph.D., Northern Illinois University
James Satterlee, Ph.D., University of California, Davis

**INSTRUCTORS:**

Lorraine Marie Deck, M.S., University of New Mexico
Miriam Pitschner Malm, M.S., University of New Mexico

The program of the Department of Chemistry conforms to the standards prescribed by the American Chemical Society. Explanation of footnotes not indicated will be found on p. 78.

**The policy of the Department of Chemistry regarding enrollment under the credit grade option is that CR (credit) will be given only for grades of C or better.**

For additional biochemistry courses, see listings under medical sciences.

**MAJOR STUDY**

**For the degree of Bachelor of Arts:** Chem 131L (or 121L), 132L, 307 (or 301), 308 (or 302), 303L, 304L, 311, 312, 351, 431, and 3 additional hours selected from courses numbered 325-496 to bring total to 34 hours; or Chem 121L, 122L, 253L, 307 (or 301), 308 (or 302), 303L, 304L, 311, 312, 351, and 431. The B.A. program must also include Physics 151, 152, 153L, and 154L, and Math 162 and 163.

**For the degree of Bachelor of Science:** Chem 131L (or 121L), 132L, 307 (or 301), 308 (or 302), 309L, 310L, 311, 312, 331L, 332L, 351, 431, and at least 7 additional hours selected from courses numbered 325-498; or Chem 121L, 122L, 253L, 307 (or 301), 308 (or 302), 309L, 310L, 311, 312, 331L, 332L, 351, 431, and at least 7 additional hours selected from courses numbered 325-498. The program must also include Physics 160, 161, 163L, 262, 264L, mathematics equivalent to 311, or 316 or higher. Only three credits of Chem 495-498 and two credits of 325-326 may be counted toward the B.A. or B.S. degree.

Students deciding on a B.S. after having taken Chem 303L-304L may qualify for the B.S. by taking Chem 310L. Two years of German is recommended for students who are planning to do advanced studies in chemistry. English 320 is also recommended.

**Physics and mathematics courses required for the B.S. or B.A. degree may not be taken on the credit grade option.**

**DEPARTMENTAL HONORS**

The student enters the program at the beginning of the junior year. At this time the student's grade-point average must be at least 3.2 overall and 3.5 in chemistry. This minimum must be maintained throughout the junior and senior years. Course requirements for graduation with honors are as follows: 131L-132L (or 121L-122L, 253L), 307-308 (or 301-302), 309L, 310L (or 303L, 304L), 311, 312, 331L, 332L, 351, 431, and 7 hours of additional courses from 325-498, including at least 3 hours of 497-498. A senior honors thesis will be written based on the senior honors research and submitted to the faculty. An oral presentation will also be made in a departmental or divisional seminar. Honors students will also take the Graduate Record Examination Advanced Test in Chemistry in their senior year and must obtain a satisfactory score.

Any deviation from the requirements prescribed above must be approved by the Department of Chemistry and must total a minimum of 34 hours (B.A. degree) or 44-47 hours (B.S. degree).

No distributed minors are allowed for B.S. and B.A. majors.

**MINOR STUDY**

Twenty hours in chemistry, including Chem 121L, 122L, 253L, and either 301, 302, 303L, 304L, or 311, 312; or Chem 131L (or 121L), 132L, 301, 302, 303L, 304L or 311, 312, and 3 additional hours selected from courses numbered 325-496. Chem 307, 308, 309L, and 310L may be substituted for Chem 301, 302, 303L, 304L in which case the minor will total 22 hours. Chem 111L and 212 do not count toward the minor.

**CURRICULUM**

**100. Natural Science. (4)**
An introduction to the Natural Science disciplines. Emphasis on intensive skills improvement in reasoning, mathematics, communications, reading and comprehensive study techniques which are required for further study in any of the Natural Science disciplines. Individual courses will emphasize content pertinent to the department offering the course, but all courses will be interdisciplinary and focus on skills development. For students who score 17 or below in Natural Science on the ACT, or who are admitted with a Natural Science deficiency. {Fall, Spring}

**111L. Elements of General Chemistry. (4)**
One-semester course in general chemistry, especially for non-science majors in the health sciences except premedicine and medical technology. 3 lectures, 3 hrs. lab. **(Credit not allowed for both 111L and 121L.)** {Summer, Fall, Spring}

**121L. General Chemistry. (4)**
Introduction to the chemical and physical behavior of matter.
Prerequisite: ACT math score of 19 or higher; or completion of Math 121 or Math 150 with a grade of C or better; or a math placement score which qualifies the student for Math 162 or Math 180. 3 lectures, 3 hrs. lab. {Summer, Fall, Spring}

**122L. General Chemistry. (4)**
Continuation of 121L.
Prerequisite: 121L or 131L with grade of C or better. 3 lectures, 3 hrs. lab. {Summer, Fall, Spring}

**131L. Honors General Chemistry. (4)**
Chemical and physical behavior of matter, atomic and molecular structure, and chemical periodicity. Introduction to quantitative laboratory techniques and chemical instrumentation. The course is strongly recommended for students intending to major in chemistry.
Prerequisites: 1 year of high school chemistry within the last 3 years and ACT math score of 29 or higher or permission of instructor. Pre- or corequisite: Math 162 or 180. 3 lectures, 3 hrs. lab. **(Credit not allowed for both 121L and 131L.)** {Fall}

**132L. Honors General Chemistry. (5)**
Thermodynamics, equilibria, and kinetics in chemical systems. Lab is a continuation of Chem 131L.
Prerequisite: 131L or grade of A in Chem 121L the previous semester or permission of instructor. Pre- or corequisite: Math 163 or 181. 3 lectures, 6 hrs. lab. **(Credit not allowed for both 122L/253L and 132L.)** {Spring}

**151L. General Chemistry, Special, Lecture or Laboratory. (1-3)**
This course provides either lecture or laboratory credit for transfer students needing only the lecture or laboratory for Chem 121L or 131L. This course is available only to transfer students with this special problem.
Prerequisite: permission of department chairperson only. {Offered upon demand}

**152L. General Chemistry, Special, Lecture or Laboratory. (1-3)**
This course provides either lecture or laboratory credit for transfer students needing only the lecture or laboratory for Chem 122L or 132L. This course is available only to transfer students with this special problem.
Prerequisite: permission of department chairperson only. {Offered upon demand}

**212. Integrated Organic Chemistry and Biochemistry. (4)**
Survey interrelating the major principles of organic chemistry and biochemistry with special emphasis toward interests of students in the health sciences.
Prerequisite: 111L or 121L. **(Credit not allowed for both 212 and 301.)** {Summer, Fall, Spring}

**226. Honors Seminar. (1)**
Discussion of research topics currently under investigation in the department. Primarily for sophomores considering the Departmental Honors Program.
Prerequisite: 132L or permission of instructor. {Spring}

**253L. Quantitative Analysis. (4)**
Theory and techniques of volumetric and gravimetric analysis.
Prerequisite: 122L. 2 lectures, 6 hrs. lab. **(Students should make every effort to complete 253L within two semesters of completion of 122L.)** {Summer, Fall, Spring}
In the following courses numbered 301-310L, the laboratory course must be taken concurrently with the corresponding lecture course. Students dropping the lecture prior to the eighth week of the semester must drop the corresponding lab; however, students dropping the lecture after that time may be allowed to continue the lab to completion, provided that at the time of dropping the lecture the grade in the lab course was C or better.

****301. Organic Chemistry. (3)**
Chemistry of the compounds of carbon.
Prerequisite: 122L or 132L. {Summer, Fall, Spring}

****302. Organic Chemistry. (3)**
Continuation of 301.
Prerequisite: 301. {Summer, Fall, Spring}

****303L. Organic Chemistry Laboratory. (1)**
To be taken concurrently with 301 or 307. 3 hrs. lab. {Summer, Fall, Spring}

****304L. Organic Chemistry Laboratory. (1)**
To be taken concurrently with 302 or 308. 3 hrs. lab. {Summer, Fall, Spring}

****307. Honors Organic Chemistry. (4)**
Chemical and physical behavior of the compounds of carbon. A quantitative approach to mechanistic principles is emphasized. This course is strongly recommended for students majoring in chemistry.
Prerequisites: an A or B in Chemistry 121L-122L or 131L-132L. It is mandatory that 303L or 309L be taken concurrently. {Fall}

****308. Honors Organic Chemistry. (4)**
Continuation of 307.
Prerequisite: 307. It is mandatory that 304L or 310L be taken con- currently. {Spring}

****309L. Organic Chemistry Laboratory. (2)**
To be taken concurrently with 301 or 307 by B.S. majors. 6 hrs. lab. {Fall}

****310L. Organic Chemistry Laboratory. (2)**
To be taken concurrently with 302 or 308 by B.S. majors. 6 hrs. lab. {Spring}

****311. Physical Chemistry. (4)**
The quantitative principles of chemistry, including gases, thermodynamics, equilibrium, quantum systems, spectroscopy and kinetics, developed by numerous problems.
Prerequisites: 132L or 253L, Math 162, 163, Physics 151, or 161; corequisite: Physics 152 or 262. {Fall}

****312. Physical Chemistry. (4)**
Continuation of 311.
Prerequisite: 311. {Spring}

****315. Introductory Physical Chemistry.(4)**
Fundamentals of physical chemistry with primary emphasis upon biological and biochemical applications.
Prerequisites: 122L and 253L or 132L, Math 162 or 180 and 181, or permission of instructor. (Cannot be used for credit toward a B.S. or B.A. in chemistry.) **(Credit not allowed for both 311 and 315.)** {Fall}

****325-326. Special Topics for Undergraduates. (1-3, 1-3 hrs each semester)‡**
Possible topics are: chemical literature, environmental chemistry, photochemistry, stereochemistry, macromolecules, $^{13}C$-NMR, natural products.
Prerequisite: permission of instructor. {325—Fall upon demand; 326—Spring upon demand}

****331L. Chemistry Laboratory III. (2)**
Integrated advanced analytical-inorganic-physical chemistry laboratory, illustrating the techniques used to quantify the energetics, dynamics, composition, and structure of matter.
Pre- or corequisites: 311, 351. 6 hrs. lab. {Fall}

****332L. Chemistry Laboratory III. (1-2)**
2 credits for chemistry majors, 1 credit for chemical engineers. Continuation of 331L.
Prerequisite: 331L; corequisite: 312. 6 hrs. lab. {Spring}

****391-392. Readings in Selected Topics. (1-3, 1-3 hrs)‡**
Advanced topics not covered in general offerings.
Prerequisite: prior arrangement with instructor and permission of the department chairperson. {391—Fall upon demand; 392—Spring upon demand}

***401L. Scientific Glassblowing. (1)**
Scientific glassblowing techniques for the serious science student interested in repairing and maintaining glass apparatus. Topics covered will be the safe cutting of glass, butt seals, side seals, ring seals, the construction of glass equipment for simple distillation and fractionation, and discussion of special sealing glasses and glass to metal seals.
Prerequisites: senior/graduate status and approval of instructor. 3 hrs. lab. {Offered upon demand}

***423. Introductory Biochemistry. (3)**
(Also offered as Med Sci 423.) Introductory course into metabolic reactions within the cell with emphasis on a chemical understanding of the way the cell integrates and controls intermediary metabolism; also included are quantitative problems in pH control, enzyme kinetics and energetics.
Prerequisite: 302 or 308. {Fall, Spring}

***425. Environmental Biochemistry. (3)**
(Also offered as Med Sci 425.) Evaluation of natural and man-made environmental agents to which we are all exposed; emphasis will be placed on understanding the biochemical reactions which accompany this exposure. Topics include mutagens, carcinogens, antibiotics, pesticides, water and air pollution, food additives, radiation biology.
Prerequisite: 423 or Biol 429. {Spring}

***431. Advanced Inorganic Chemistry. (3)**
Survey of electronics and molecular structures of inorganic compounds, coordination chemistry, bonding theory, physical methods, periodicity, and reactions.
Prerequisite: 312 or permission of instructor. {Fall}

***433. Chemical Applications of Group Theory. (2)**
The role of symmetry in chemical problems. Areas to be treated include representation theory, vibrational and electronic spectroscopy, molecular orbital theory and orbital control of chemical reactions.
Prerequisite: 312 or equivalent. {Fall}

***454L. Instrumental Analysis. (4)**
Instrumentation and applications of instrumental methods to chemical analysis, including spectro-photometric, electroanalytical, X-ray diffraction, neutron activation, and chromatographic methods.
Prerequisite: 351 or permission of instructor. 2 lectures, 6 hrs. lab: {Spring upon demand}

***455. Modern Aspects of Chemical Analysis. (3)**
Treatment of current areas of chemical analyses such as trace analysis in the environment, clinical analysis, or high pressure liquid chromatography. {Fall upon demand}

***466. Computers in Chemistry. (2)**
Introduction to the Fortran IV computer language with application to problems of chemical interest. {Spring}

**495-496. Undergraduate Problems. (1-3, 1-3 hrs each semester)**
Prerequisite: permission of instructor. {495—Summer, Fall; 496—Spring}

**497-498. Senior Honors Research. (1-3, 1-3 hrs each semester)**
Prerequisite: permission of instructor. Senior paper based on independent research. {497—Summer, Fall; 498—Spring}

**501. Molecular Structure Theory.** [Chemical Bonding Theory.] **(3)**
Fall}

**504. Chemical Dynamics. (3)**
Spring}

**511. Mechanisms in Organic Chemistry. (3)**
Prerequisite: permission of instructor. {Fall}

**512. Mechanisms in Organic Chemistry. (3)**
Prerequisite: 511 or permission of instructor. {Spring}

**513. Organic Molecular Structure Determination. (3)**
Fall upon demand}

**514. Synthesis in Organic Chemistry. (3)**
Prerequisite: 511 or permission of instructor. {Spring}

**515-516. Topics in Organic Chemistry. (1-3, 1-3 hrs)‡**
515—Fall upon demand; 516—Spring upon demand}

**521. Radiochemistry. (3)**
Prerequisite: 312. {Offered upon demand}

**522. Advanced Topics in Radiochemistry. (3)**
Prerequisite: permission of instructor. {Offered upon demand}

***524.** [523.] **X-Ray Crystallography. (3)**
Prerequisite: 433 or permission of instructor. {Spring upon demand}

***533. Inorganic Bonding Theory. (3)**
Prerequisites: 431 and 433 or permission of instructor. {Fall upon demand}

***534.** [436.] **Physical Methods in Inorganic Chemistry.** [Spectroscopy.] **(3)**
Prerequisites: 431 and 433 or permission of instructor. {Spring upon demand}

***535.** [534.] **Advanced Coordination Chemistry. (3)**
Prerequisite: 431 and 433 or permission of instructor. {Fall upon demand}

***536. Synthesis and Mechanism in Inorganic Chemistry.** [Inorganic Reaction Mechanisms.] **(3)**
Prerequisite: 431 or permission of instructor. {Spring upon demand}

***537-538. Topics in Inorganic Chemistry. (1-3, 1-3 hrs)‡**
Prerequisite: permission of instructor. {537—Fall upon demand; 538—Spring upon demand}

***540. Advanced Analytical Chemistry. (3)**
{Spring}

***541. Separations. (3)**
{Fall upon demand}

***542. Chemical Measurements. (3)**
{Spring upon demand}

***543. Analytical Spectroscopy. (3)**
{Fall upon demand}

***544. Electrochemistry. (3)**
{Spring upon demand}

***545-546. Topics in Analytical Chemistry. (1-3, 1-3 hrs)‡**
{545—Fall upon demand; 546—Spring upon demand}

***560. Biophysical Chemistry. (3)**
Prerequisites: 312 or 315 and 586 or permission of instructor. {Spring upon demand}

***561. Quantum Chemistry I. (3)**
{Fall upon demand}

***562. Quantum Chemistry II. (3)**
Prerequisite: 561. {Spring upon demand}

***563. Thermodynamics. (3)**
Prerequisite: 312 or permission of instructor. {Fall upon demand}

***564. Statistical Thermodynamics. (3)**
Prerequisite: 312 or permission of instructor. {Spring upon demand}

***565. Kinetics. (3)**
Prerequisite: 312 or permission of instructor. {Fall upon demand}

***566. Spectroscopy. (3)**
Prerequisite: 312 or 561 or permission of instructor. {Spring upon demand}

***567-568. Topics in Physical Chemistry. (1-3, 1-3 hrs)‡**
Prerequisite: permission of instructor. {567—Fall upon demand; 568—Spring upon demand}

***585. Advanced Biochemistry I. (3)**
(Also offered as Med Sci 585.)
Prerequisites: 302 or 308; 423 or a passing grade on ACS placement exam; pre- or corequisite: 311 or 315; undergraduates—approval of instructor. {Fall}

***586. Advanced Biochemistry II. (3)**
(Also offered as Med Sci 586.)
Prerequisites: 302 or 308; 423 or a passing grade on ACS placement exam; pre- or corequisite: 311 or 315; undergraduates—approval of instructor. (585 and 586 are independent courses and may be taken in either sequence). {Spring}

***587. Advanced Topics in Biological Chemistry. (1-3, 1-3 hrs)‡**
(Also offered as Med Sci 587.)
Prerequisite: 423 and sometimes 585 or 586, depending upon topic. {Offered upon demand}

***599. Master's Thesis.(1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***623. Biochemistry of Steroids. (3)**
(Also offered as Med Sci 623.)
Prerequisites: 302 or 308, 423 or 585, or Med Sci 590-591. {Fall upon demand}

***625. Chemistry Seminar. (1)**
{Fall, Spring}

***650. Research/Readings. (2-6, to a maximum of 27)**
{Summer, Fall, Spring}

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# CHICANO STUDIES

Tobias Duran, Coordinator
1815 Roma NE, 277-5020

**COORDINATOR:**

Tobias Duran, M.A., San Jose College

Chicano Studies is an interdisciplinary program of study. Courses are offered in several departments, including History, Sociology, Political Science, Spanish, American Studies, Music, Anthropology, and Psychology.

**CURRICULUM**

Am. St. 241: The Chicano Experience in the United States. (3)
Am. St. 341: History of Conflict in New Mexico. (3)
Hist. 283: La Raza: A History of Mexican-Americans. (3)
Span. 300: Chicano Literature. (3)
Span. 304: Southwest Hispanic Folklore. (3)
Soc. 326: Sociology of New Mexico. (3)
Phil. 115: Introduction to Chicano Thought. (3)
Ed. Fdn 383: Education of the Mexican American: Trends, Issues, Problems. (3)

# COMMUNICATIVE DISORDERS

Lloyd E. Lamb, Chairperson
608 Buena Vista NE, 277-2918

**PROFESSOR:**

Lloyd E. Lamb, Ph.D., Purdue University

**ASSOCIATE PROFESSORS:**

Dolores S. Butt, Ph.D., University of New Mexico
Richard B. Hood, Ph.D., Stanford University

**ASSISTANT PROFESSORS:**

Sumner L. Blanchard, Ph.D., University of Denver
Linda L. Riensche, Ph.D., Memphis State University
Carol E. Westby, Ph.D., University of Iowa

**INSTRUCTOR:**

Matthew Smith, M.S., University of New Mexico

**LECTURER:**

Phyllis S. Wilcox, M.S., Southeastern Louisiana University

**MAJOR STUDY**

Thirty-six hours in communicative disorders. Required: 302, 303, 320; 321, 430. Electives: 21 hours from 325, 326L, 330, 350, 358, 422, 425, 426, 427, 429, 435, 436, 437, 438L, 440, 450, 458, 494; Ling 292.

The Department of Communicative Disorders endorses the training program recommendations of the American Speech and Hearing Association with training at the bachelor's level being primarily preprofessional. In order to meet professional certification requirements, a person must complete the master's degree or equivalent with well-rounded academic and clinical experience.

**MINOR STUDY**

Eighteen hours in the Department of Communicative Disorders chosen from courses listed for the major.

**CURRICULUM**

**105. Speech for Foreign Language Students. (1 hr. per semester, to a maximum of 3)** Bolton
Clinical work for students who speak English with a foreign accent. (May be taken under CR/NC option.)

§**202. Communicative Disorders. (3)**
(Also offered as Spec Ed 202.) Nature of communicative disorders, including speech, hearing, and language disorders in children and adults. Methods of identification and remediation.

**220. Workshop in Communicative Disorders. (1-3, repeatable up to 6 hrs.)** Staff
An introduction to the identification and management of communicative disorders for classroom aides and teachers. Content to be varied according to demand.
No Prerequisites.

**280. Scientific Bases of Speech. (3)**
(Also offered as Sp Com 280.) The bases of the speech process as presented in the scientific materials of such related fields as physics, physiology, psychology, and linguistics.

**292L. Introduction to Linguistic Analysis. (3)**
(See Ling 292L.)

***302. Communicative Disorders. (3)** Swisher
(Also offered as Spec Ed 302.) Nature of communicative disorders, including speech, hearing, and language disorders in children and adults. Methods of identification and remediation. {Summer, Fall, Sring}

***303. Phonetics. (3)** Riensche, Hudson-Edwards
(Also offered as Sp Com and Ling 303.) English phonetics as applied to problems of articulation, pronunciation, rhythm, dialects, and to the teaching of speech, English, language, and communicative disorders. {Fall, Spring}

***320. Acoustics and Perception of Speech.** [Acoustics of Speech and Hearing.] **(3)** Riensche
Principles and processes of sound generation, transmission, reception, and perception in human communication. 2 lectures, 2 hrs. lab. {Spring}

***321. Introduction to Audiology. (3)** Lamb
History of audiology, the auditory stimulus, pathological conditions of the auditory system, basic methods of individual pure tone audiometry. {Fall}

***325. Processes of Speech Articulation. (3)** Swisher
A detailed study of the science of speech articulation, including consideration of motor and sensory systems in the coordination of patterns of oral activity, and the role of learning processes in development of typical and atypical articulation.
Prerequisite: 303. {Spring}

***326L. Processes of Speech Articulation Laboratory. (1)** Staff
Projects and demonstrations in support of theory presented in 325.
Pre- or corequisite: 325. {Spring}

***330. Speech Pathology in the Schools. (3)** Staff
An introduction to types of speech and hearing problems found in the schools. {Offered upon demand}

***350. Anatomy and Physiology of Speech and Hearing. (4)** Riensche
Structure and function of the speech and hearing mechanisms as they relate to normal and disordered communication. {Fall}

**358. Pre-Clinical Training. (1)** Bolton, Lamb
Introduction to basic clinical skills prerequisite for clinical practicum.
Prerequisites: 302, 303, 321, 325, and permission of instructor. {Summer, Fall, Spring}

***420. Workshop in Communicative Disorders. (1-3, repeatable up to 6 hrs.)** Staff
Not accepted toward a communicative disorders major.
No prerequisites.

***422. Hearing Conservation. (3)** Hood
The role of the speech and hearing specialist in hearing conservation programs; screening audiometry; special tests for infants and children; hearing problems in industry.
Prerequisite: 321 or permission of instructor. {Spring}

***425. Aural Rehabilitation. (3)** Hood
Appraisal and management of individuals with impaired hearing.
Prerequisite: 321. {Spring}

***426. Beginning Sign Language.** [Manual Communication.] **(3)** Wilcox
Fingerspelling and sign language. {Fall, Spring}

***427. Problems of the Hearing-Impaired. (3)** Hood
(Also offered as Spec Ed 427.) Communicative, educational, and psycho-social problems of the deaf and hard of hearing.
Prerequisite: 302 or 321 or permission of instructor. {Fall}

***428L. Aural Rehabilitation Laboratory. (1)** Hood
Projects and demonstrations in support of theory presented in 425.
Pre- or corequisite: 425. {Spring}

***429. Intermediate Sign Language.** [Intermediate Manual Communication.] **(3)** Wilcox
Prequisite: permission of instructor. {Fall, Spring}

***430. Development of Speech and Language. (3)** Butt
The study of acquisition of phonetic and morphemic skills in the child and in the adult.
Prerequisite: Psych 320. {Fall}

***431L. Development of Speech and Language Laboratory. (1)** Butt
Projects or demonstrations in support of theory presented in 430.
Pre- or corequisite: 430 {Fall}

***432.** [538.] **Psycholinguistic Testing. (3)** Butt

***433. Advanced Sign Language. (3)** Wilcox
Prerequisite: permission of instructor. {Fall, Spring}

***435. Processes of Phonation. (3)** Blanchard
The scientific study of normal and atypical processes of phonation as they affect communication.
Prerequisites: 302, 325, and 350. {Fall}

***436. Stuttering. (3)** Blanchard
Theories of stuttering and other rhythmic disorders and approaches to treatment.
Prerequisite: 302 or permission of instructor. {Fall}

***437L. Stuttering Laboratory. (1)** Blanchard
Projects and demonstrations in support of theory presented in 436.
Pre- or corequisite: 436. {Fall}

**440. Undergraduate Problems. (1-3, to a maximum of 6)**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***450. Neurology and Neurophathologies of Speech. (4)** Swisher
Structure and function of the central and peripheral nervous systems as they relate to normal and disordered communication.
Prerequisite: 350 or permission of instructor. {Fall}

***451. Aphasia and Related Disorders. (3)** Porch
Symbolic disorders of communication, including receptive and expressive speech and language problems.
Prerequisites: 302, 430, and 450, or permission of instructor. {Spring}

***458. Clinical Practice. (1-3, to a maximum of 6)** Staff
Speech pathology and audiology in the clinic.
Prerequisite: 358 or permission of instructor. {Summer, Fall, Spring}

***492. Introduction to Linguistics. (3)**
(See Engl 440.)

***493. Reading and Research in Honors. (3)**
{Summer, Fall, Spring}

***494. Senior Thesis. (3)**
{Summer, Fall, Spring}

***503. Experimental Phonetics. (3)** Riensche

***506. Research and Writing in Communicative Disorders. (3)** Riensche

***520. Hearing Science. (3)** Lamb

***525. Seminar in Voice Disorders. (3)** Blanchard
{Spring}

***526L. Voice Disorders Laboratory.** [Processes of Phonation Lab.] **(1)** Blanchard
{Spring}

***530. Language Disorders in Children. (3)** Butt

***531. Communication Training of the Multi-Handicapped. (3)** Butt

***535. Seminar in Cleft Palate. (3)** Swisher

***536. Seminar in Speech and Language Pathology. (3, repeatable to maximum of 6)** Staff

***537. Clinical Aphasiology. (3)** Porch
Prerequisite: 451 or permission of instructor. {Fall}

***539. Seminar: Current Concepts in Speech Pathology and Audiology. (1, repeatable to a total of 2)** Lamb

***551-552. Problems. (1-3, 1-3 hrs. each semester)**

***555. Seminar in Educational Linguistics.** [Seminar in Linguistics and Language Pedagogy.] **(3)**‡
(See: Ed Fdn, Ling, M Lang, Sp Com 555.)

***558. Clinical Field Study.** [Field Study.] **(3-6)** Staff

***559. Research Field Study. (1-3)** Staff

***560. Clinical Audiology I. (3)** Hood

***561. Clinical Audiology II. (3)** Lamb

***563. Hearing Aids. (3)** Hood

***565. Seminar in Aural Rehabilitation. (3)** Hood
{Summer, Fall, Spring}

***566. Seminar in Audiology. (3)** Lamb

***599. Master's Thesis. (1-6 hrs. per semester)**

§ Offered at the Gallup Branch.

# COMPARATIVE LITERATURE

Joseph Zavadil, Chairperson
Humanities 317, 277-4511

**PROFESSORS:**

Robert Evans, Ph.D., University of Florida, (English)
Alfred Rodriguez, Ph.D., Brown University, (Languages)

**ASSOCIATE PROFESSORS:**

Patrick J. Gallacher, Ph.D., University of Illinois, (English)
Dick C. Gerdes, Ph.S., University of Kansas, (Languages)
Bruno Hannemann, Ph.D., University of California, (Berkley) (Languages)
Peter Pabisch, Ph.D., University of Illinois (Languages)
Warren S. Smith, Ph.D., Yale University, (Languages)
Jon M. Tolman, Ph.D., University of New Mexico, (Languages)
Joseph B. Zavadil, Ph.D., Stanford University, (English)

**ASSISTANT PROFESSORS:**

June Carter, Ph.D., University of Washington, (Seattle) (Languages)
Byron T. Lindsey, Ph.D., Cornell University, (Languages)
Antonio Marquez, Ph.D., University of New Mexico, (English)

**LECTURER:**

Ronald T. Swigger, Ph.D., Indiana University, (English)

Comparative literature is an interdepartmental program administered by the Department of English. Students planning to major or minor in comparative literature are urged to consult with a comparative literature adviser so that their programs may be carefully planned.

**MAJOR STUDY**
The major in comparative literature normally consists of 3 hours distributed as follows:

Comparative Literature 260 and 12 additional hours in comparative literature;

Nine hours of literature selected from courses numbered 300 or above in each of two languages, one of which may be English (literature in translation may not be used to satisfy this requirement.)

A student is strongly advised to acquire reading knowledge of a second foreign language. Satisfactory completion of one of the following courses is recommended: French 202, 105-106, 275-276; German 202, 105-106; Greek 102, 301-302; Italian 275-276; Latin 201-202; Portuguese 275-276; Russian 201-202, Spanish 202, 105-106. Reading proficiency may also be demonstrated by examination through the University Testing Service.

Students may minor in any national literature, but courses taken to satisfy requirements for the minor may not be used to satisfy major requirements.

**MINOR STUDY**

A minor in comparative literature normally consists of Comparative Literature 260 and 15 additional hours of courses in literature, 9 of which must be comparative literature. Six hours may be courses in any national literature. A student majoring in a national literature may not satisfy this requirement with literature courses in the language of his/her major.
The student is required to demonstrate reading proficiency in one foreign language by the satisfctory completion of one of the courses listed above or by examination through the University Testing Service.

**PERIOD MINOR STUDY**

A period minor, an interdisciplinary minor with emphasis on one historical period, may consist of Comparative Literature 260 and 15 additional hours of appropriate courses drawn from literature, history, fine arts, music, philosophy, or other related fields, with the approval of a comparative literature adviser. Proficiency in an appropriate foreign languages must be demonstrated, as in the comparative literature minor.

**CURRICULUM**

**223-224. Literary Questions. (3, 3)**
Examination of basic questions in comparative literature studies: themes, movements, modes, interaction of literature with other disciplines, etc. Work will be comparative and reading list will represent a cross-section of Western European, American, Russian, and Classical literatures. Titles will vary as content varies.

**260. Introduction to the Methodology of Comparative Literature. (3)**
General introduction to the theory and practice of studies in comparative literature. The study of how to study influences, movements, reception, genres, and the interaction of literature with other subjects. Required for undergraduate major and minor.

**300. Studies in Literature. (3)**
(See Engl 300.) Comparative literature credit available for some sections with the permission of the comparative literature adviser.

***334. Spanish American Literature in Translation. (3)**
(See Span 334.)

***335. French Literature in Translation. (3)**
(See French 335.)

***336. German Literature in Translation. (3)**
(See German 336.)

***337. Spanish Literature in Translation. (3)**
(See Span 337.)

***338. Russian Literature in Translation. (3)**
(See Russ 338.)

***340. Topics in Russian Literature in Translation. (3)**
(Also offered as Russ 340.)

***341. Greek Mythology. (3)**
(See Greek 341.)

***343. Soviet Literature in Translation. (3)**
(Also offered as Russian 343.)

***344. Topics in Latin Literature in Translation. (3)**
(See Latin 344.)

***345. Topics in Greek Literature in Translation. (3)**
(See Greek 345.)

**375. World Literature from Homer to Dante. (3)**
(See Engl 375.)

**376. World Literature from Rabelais to Mann. (3)**
(See Engl 376.)

***380. Seminar in Comparative Literature. (1-3)** Staff
May be repeated for credit up to 6 hrs. Seminar will deal with individual authors, genres, or periods in two or more literature. Reference to other subject. {Spring 1981}

**410. Literary Criticism. (3)**
(See Engl 410.)

***450. Special Topics in German Literature. (3)**
(See German 450.)

**452. The Middle Ages. (3)**
(See Engl 452.) Comparative literature credit available for some sections with the permission of the comparative literature adviser.

**459. Irish Literature. (3)**
(See Engl 459.) Comparative literature credit available for some sections with the permission of the comparative literature adviser.

**470. Contemporary Literature. (3)**
(See Engl 470.) Comparative literature credit available for some sections with the permission of the comparative literature adviser.

***475. Dante in Translation. (3)**
(See Italian 475.)

***481. The Folktale in English. (3)**
(See Engl 481.)

**487 Studies in Genre: Comedy, Epic, Satire, Tragedy, etc. (3)**
(See Engl 487.)

***488. Interdisciplinary Studies. (3)**
(See Engl 488.)

***490. Seminar in Russian Literature. (3)**
(See Russ 490.)

***500. Introduction to Graduate Study in Comparative Literature. (3)**

***510. Criticism. (3)**
(See Engl 510.)

***513. The Middle Ages. (3)**
(See Engl 513.)

***551. Problems. (1-6 hrs. per semester)†**
For M.A. candidates.

***580. Seminar in Modern Languages and Literatures. (1-6)†**
(Also offered as M Lang 580.)

***581. Special Topics: History of Ideas, Literary Movements, etc. (3)**
(See Engl 588.)

***587. Genre: Comedy, Epic, Satire, Tragedy, etc. (3)**
(See Engl 587.)

***599. Master's Thesis. (1-6 hrs. per semester)**

# COMPUTING SCIENCE

See Engineering, Computing Science.

# DANCE

See Theatre Arts, Dance

# DENTAL HYGIENE

Director to be appointed
Novitski Hall, 277-4520

**ASSISTANT PROFESSORS:**

Clara O. Miera, M.Ed., University of New Mexico
Glenna B. Taylor, M.A., University of New Mexico

**INSTRUCTORS:**

Debra Lakies, B.S., University of West Florida
Demarise Wright, M.Ed., University of Houston

## DENTAL HYGIENE

**CURRICULUM**

See pp. 74-75.

**201. Pre-Clincal Dental Hygiene. (2)** Lakies
Didactic instruction into the theory and clinical skills of dental hygiene. 2 hrs. {Fall}

**202L. Pre-Clinical Dental Hygiene Laboratory. (2)** Lakies
Introduction to the clinical skills of dental hygiene. 8 hrs. lab. {Fall}

**203. Clinical Dental Hygiene I. (2)** Lakies
Didactic instruction in techniques of oral hygiene procedures. 2 hrs. {Spring}

**204L. Clinical Dental Hygiene I. (3)** Lakies
Clinical experience in techniques of oral hygiene procedures and practices.
Prerequisites: 201, 202L, 210, 211L, 230, 250. 12 hrs. lab. {Spring}

**210. Head and Neck Anatomy. (3)** McLeod
Anatomy of head and neck with emphasis on oral structures and their function. 3 lectures. {Fall}

**211L. Tooth Morphology. (2)** Miera
Morphology of the tooth structure. 1 lecture, 3 hrs. lab. {Fall}

**212L. Oral Radiography. (3)** Staff
The physics of roentgenology, the operation of the x-ray machine, and the practice of taking and developing dental x-rays. 1 lecture, 4 hrs. lab. {Fall}

**230. Principles of Oral Medicine. (2)** Staff
Didactic course introducing basic clinical knowledge prior to patient contact. 2 lectures. {Fall}

**240. General and Oral Pathology. (3).** Parry
Pathology of the head and neck and the major diseases that affect the oral cavity. 2 lectures. {Spring}

**250. Histology. (2)** Wright
Study of cells, tissues, and organ systems of the human body with emphasis on oral structure. 1 lecture, 2 hrs lab. {Fall}

**276. Principles of Pharmacology. (3)** Medon
(See Pharm 276.) 3 lectures. {Spring}

**300. Clinical Dental Hygiene II. (2)** Taylor
Continuation of DH 203. Didactic instruction in dental hygiene sciences. 2 lectures. {Fall}

**301L. Clinical Dental Hygiene II. (3)** Staff
Clinical experiences in dental hygiene procedures and practices. 12 hrs. lab. {Fall}

**302. Clinical Dental Hygiene III. (2)** Taylor
Continuation of 300. 1 lecture. {Spring}

**303L. Clinical Dental Hygiene III. (4)** Staff
Clinical experience in dental hygiene procedures and practices.
Prerequisite: completion of first three semesters of professional curriculum. 16 hrs. lab. {Spring}

**320L. Dental Materials. (2)** Staff
A survey of materials used in dentistry; training in common dental laboratory procedures.
Corequisite: 301L. 1 lecture, 2 hrs. lab. {Fall}

**322. Community Dental Health. (3)** Wright
Survey of health dentistry in regard to principles, methods, and materials. 2 lectures. {Fall}

**340. Field Experience.** [Dental Health Education.] **(1)** Wright
Application of principles and objectives studied in 322. Students will plan and develop specific educational problems for schools, hospitals, nursing homes, mental retardation centers, and other needs groups in the community. 2 hrs. {Spring}

**342. Ethics, Jurisprudence and Practice Management. (2)** Wright
Introduction to dental hygiene professional ethics, professional association, principles, laws, and regulations. Office management and record keeping are discussed. 2 lectures. {Spring}

**344. Special Topics in Dental Hygiene. (2)** Staff
Discussion of topics related to professional advancements, innovations and concerns national and international. 2 lectures. {Spring}

**352. Advanced Dental Procedures. (3)** Taylor
Lab course covering principles and use of restorative materials used in dentistry. 2 lectures, 2 hrs lab. {Fall}

**370. Periodontics. (3).** Parry
Didactically covers basic biological principles and the prevention and treatment of periodontal disease. 3 lectures. {Fall}

**380. Advanced Clinical Dental Hygiene. (3)** Staff
Instruction and clinical practice in the administration of local anesthetic agents and in periodontal procedures including soft tissue curettage and root planing. 2 lectures, 3 hrs. lab. {Offered upon demand}

**400. Seminar. (3)** Staff
Critical analysis of literature in the health and education professions.
Prerequisites: Ed Fdn 310, permission of instructor. {Offered upon demand}

**410. Research Methods.** [Internship Methods.] **(3)** Staff
Developing of research in regard to special areas in dental hygiene with emphasis on writing reports.
Prerequisites: Ed Fdn 303, 310, Lib Sci 432. {Offered upon demand}

**440. Student Teaching/Field Experience. (6)** Staff
A course to provide the student with the opportunity to achieve educational skills and indepth knowledge in an area of special interest such as dental hygiene teaching, public health and hospital dental hygiene.
Prerequisite: 400, 410, Lib Media 432 and 433. 1 seminar, 1 hr teaching, 4 hrs rotation. {Spring}

# DENTAL ASSISTING

**CURRICULUM**

**120. Basic Human Biology. (2)** Sandoval
The study of basic structures, organs, and biological functions of the human body. 2 lectures {Fall}

**121L. Dental Science.** [Introduction to Dental Sciences.] **(3)** Miera
Study and manipulation of materials used in dentistry. 2 lectures, 2 hrs. lab. {Fall}

**122L. Advanced Dental Science. (4)** Sandoval
Composite course covering microbiology, pharmacology, pathology, and head and neck anatomy. 4 lectures. {Spring}

**130. Preventive Dentistry. (1)** Miera
Lecture on the prevention of dental disease and methods utilized to prevent disease. 1 hr. lecture.
Prerequisite: 121L, 131L. {Spring}

**131L. Pre-Clinical Dental Assisting.** [Principles of Dental Assisting.] **(4)** Miera
Detailed study of the application and practice of dental assisting. 1 lecture, 3 hrs. lab. {Fall}

**132L. Clinical Dental Assisting.** [Practicum in Dental Assisting.] **(2)** Miera
Lecture and clinical course coordinating classroom and clinical skills.
Prerequisites: 121L, 131L. {Spring}

**134L. Extra Mural Clinical Dental Assisting. (5)** Miera
Clinical experiences in private practice setting, a dental clinic, or in any other appropriate facility.
Prerequisites: 121L, 131L. {Spring}

**211L. Tooth Morphology. (2)** Miera
Morphology of tooth structures. 1 lecture, 3 hrs. lab. {Fall}

# ECONOMICS

Alfred L. Parker, Chairperson
1915 Roma NE #148, 158, 277-3141 or 5304.

**PROFESSORS:**

Shaul Ben-David, Ph.D., Cornell University
Gerald Boyle, Ph.D., Syracuse University
H. Stuart Burness, Ph.D., University of Kansas
Pham Chung, Ph.D., University of Pennsylvania
Albert Church, Ph.D., Claremont Graduate School
Sanford Cohen, Ph.D., Ohio State University
Ronald Cummings, Ph.D., University of Kansas
Micha Gisser, Ph.D., University of Chicago
Peter Gregory, Ph.D., Harvard University
David Hamilton, Ph.D., University of Texas
Paul Jonas, Ph.D., Columbia University
Allen V. Kneese, Ph.D., University of Indiana
Roger Norton, Ph.D., Johns Hopkins University
Alfred L. Parker, Ph.D., Ohio State University

**ASSOCIATE PROFESSORS:**

F. Lee Brown, Ph.D., Purdue University
Donald Tailby, Ph.D., Rutgers University
Paul Therkildsen, Ph.D., University of Colorado
Lee Zink, Ph.D., Oklahoma State University

**ASSISTANT PROFESSORS:**

Roger Andreae, Ph.D., Vanderbilt University
Max Bennett, Ph.D., Johns Hopkins University
Patricia Oslund, Ph.D., University of Kansas

Explanation of footnotes not indicated will be found on p. 78

**MAJOR STUDY**

All programs leading to a major in economics require a common core consisting of Econ 200-201 (Principles of Economics), Econ 300, 303 (Micro- and Macro-economic Theory), and 18 additional hours of economics. Although majors may select any economics courses to fulfill the 18 hours of electives, past experience indicates that majors specialize in one of the following four areas of interest which are listed for advisement only:

**A. Preprofessional Economics** — Preprofessional students should take the following economics courses: Money and Banking (315), Mathematical Methods in Economics (407), and History of Economic Thought (360). In the Mathematics Department, one year of calculus (Math 180, 181); Statistical Methodology and Linear Algebra with Applications are strongly recommended. This program prepares the student for graduate study in economics.

**B. Pre-Law** — Students wishing to prepare for law school are advised to select among: Statistical Analysis (289), Environmental Economics (342), Government Control of Business (332), History of Economic Thought (360), Public Finance (350), Comparative Economic Systems (450), Consumer Economics (330), and Labor Economics (320).

**C. Business Economics** — Students planning to enter employment in the private or public sector upon graduation are advised to select from among the following: Statistical Analysis (289), Money and Banking (315), Financial Management (326), Government Control of Business (332), as well as accounting, marketing, and organization theory in the Anderson School of Management.

**D. Contemporary Economic Problems** — The student interested in contemporary problems which are amenable to economic analysis and controversies in economics is advised to take the following courses: Radical vs. Conservative Economics (229), Consumer Economics (330), The Economics of Poverty (331), Urban Economics (341), and Environmental Economics (342).

DISTRIBUTED MINOR FOR ECONOMICS MAJORS. With the consent of the departmental chairperson, a major may offer an American studies minor as well as a minor in a single department. For requirements, see "American Studies".

**MINOR STUDY**

Econ 200, 201, and 12 hours in upper-division courses in economics, of which at least one course must be either Econ 300 or 303.

**CURRICULUM**

**100. Social Science. (4)**
An introduction to the social science disciplines. Emphasis on intensive skills improvement in communications, reading comprehension, study techniques and logical reasoning which are required for further study in any of the social science disciplines. Course themes may vary by department but all courses will be interdisciplinary and will emphasize skills. For students who score 13 or below in social science on the ACT or who are admitted with a social science deficiency. (not a course to receive credit for minor or major)

**101. Introduction to Economics. (3)**
Origins of capitalism, transplantation and adaptation in the New World, and new institutions in nineteenth- and twentieth-century America.

**200. Principles and Problems. (3)**
Introduction to macro-theory and money and banking. Emphasis on contemporary economic problems, e.g., inflation, unemployment, poverty.
Econ 200 and 201 are prerequisites to all upper-division courses.

**201. Principles of Economics. (3)**
Introduction to micro-theory, international trade theory, economic growth and development.
Econ 200 and 201 are prerequisites to all upper-division courses.

**203. The Enviromental Problem. (3)**
(Also offered as Arch, Phil 203.) What are the environmental problems and how they are approached by various disciplines; how problem are defined, limits imposed on scope of problems, solutions and tradeoffs.

**212. Capital Markets and Personal Investment. (3)** Church
Investment options available to the individual will be analyzed in terms of economic theories of capital markets. Risk, value, returns and portfolio analysis.

**229. Radical vs. Conservative Economics. (3)** Gisser, Church
The investigation and discussion of controversial socio-economic issues. Includes such topics as the economics of discrimination, distribution of wealth, power and income, economic imperialism, the role of government, minimum wage legislation, and the military-industrial complex: Study will be directed by two or more faculty members who will be advocates of the radical and conservative positions. Utilization of position papers by students, panel discussions, debate, and field work on local issues.
Prerequisite: 201. {Fall}

**239. Economics of Feminism. (3)**
Topics include economic discrimination and the status of women in western society, feminism and alternative economic systems, economic implications of family and other traditional structures, economic rationality vs. the convenient social virtue, and economic policy for achieving feminist goals.
Prerequisite: 201 or consent of instructor. {Spring}

**289. Statistical Analysis. (3)**
(See Math 102.)

****300. Micro-Economic Theory. (3)**
Intermediate economic analysis with emphasis on equilibrium models under perfect and imperfect competition.
Prerequisites: 200, 201.

**301-302. Interdepartmental Studies in the Culture of the U. S. (1-3, 1-3)**
(See Am St 301-302.) May be taken for departmental credit only with the consent of the chairperson.

****303. Macro-Economic Theory. (3)** Gisser
Composition, fluctuations, growth, and distribution of national income.
Prerequisite: 200.

****315. Money and Banking. (3)** Chung, Parker
Principles of money, credit, and banking; organization and operation of the banking system; and the relationship between money, banking, and the level of economic activity.
Prerequisites: 200, 201, or consent of instructor.

***320. Economics of Labor Relations. (3)** Cohen Gregory
Labor force, unions, labor-management relations, legislation, wages, and level of employment.
Prerequisites: 200, 201.

***330. Consumer Economics. (3)** Hamilton
The theory of consumption.
Prerequisites: 200, 201, or consent of instructor.

***331. The Economics of Poverty. (3)** Hamilton
Defines the scope of poverty problems, relates the problem to economic theory, and examines possible solutions.
Prerequisites: 200, 201, or consent of instructor.

***332. Government Control of Business. (3)** Parker
Government and social control of business enterprise including public utilities; the economics of rate making in public utilities.
Prerequisites: 200, 201, or consent of instructor.

**333. Market Power, Antitrust, Regulation and Public Enterprise. (3)** Parker
Theory of regulation and its empirical evidence. The objective and impact of antitrust policies, direct regulation, and public ownership.
Prerequisite: 300 or consent of instructor.

***335. The Economics of Health. (3)** Bennett
A micro-economic study of resource allocation to the health industry and among health services. Topics investigated include the supply of and demand for health services such as physician, hospital, etc. The influence of private and public insurance on the private demand and supply of health services is identified through empirical studies.
Prerequisites: 200, 201, or consent of instructor.

**340. American Indian Economic Development. (3)** Staff
Economic development potentials and problems of American Indian Tribes using tools of economic analysis. Includes investigation by students of particular economic problems.
Prerequisites: 200 and 201 or consent of instructor.

**341. Urban Economics. (3)** Church
Economic analysis of urban problems with a focus on housing, discrimination, local finances, deterioration of the environment, and other problem areas. Theoretical issues and the role of policy will be treated. Speakers will be invited from the community to discuss local problems.
Prerequisites: 200, 201, or consent of instructor.

***342. Environmental Economics. (3)** Burness
Economics of "spaceship" earth; causes of environmental deterioration in market as well as nonmarket economics; role of economic policy in controlling pollution with special emphasis on water, air, and solid waste residuals.
Prerequisite: 201 or consent of instructor.

***343. Seminar on Energy Administration. (3)**
(Also offered as Pub Ad 575.) Public policy and administrative issues and problems in federal and state energy agencies and programs.
Prerequisite: consent of instructor. {Spring}

***350. Public Finance. (3)** Boyle, Therkildsen
(Also offered as Pol Sc 350.) Taxation, governmental borrowing, financial administration, and public expenditures.
Prerequisites: 200, 201.

***360. History of Economic Thought. (3)** Tailby
Development of the principle economic doctrines and schools of economic thought from the Physiocrats to Keynes.
Prerequisites: 200, 201.

***364. Rise of Modern Industry. (3)** Hamilton
Institutional and technological forces in the evolution of the industrial economy.
Prerequisites: 200, 201, or consent of instructor.

***365. American Economic Growth. (3)**
Using economic theory and data, the course analyzes the sources and patterns of American economic growth from colonial time to the present.
Prerequisites: 200, 201, or consent of instructor.

***407. Mathematical Methods in Economics. (3)** Brown
(Also offered as Math 407.) A survey course designed to develop those mathematical results and methods which find frequent use in economic analysis.
Prerequisite: one year of calculus or consent of instructor.

***409. Economic Statistics. (3)** Ben-David, Brown
Prerequisites: statistics, economic theory.

***410. Selected Issues in Health Economics. (3)** Bennett
Studies of specific health problems, benefits and costs in streptococcal culturing; immunizations issues in pneumococcal pneumonia, measles, polio, and influenza and econometric studies about hospital efficiency.
Prerequisite: 335.

***415. Central Banking. (3)** Chung
Major developments in central banking theory and practice and comparative analysis of central banking in developed and underdeveloped money markets.
Prerequisite: 315.

***420. Economic Problems of Underdeveloped Countries. (3)** Tailby
Theories, policies, and practices, with emphasis on Latin American economic problems.
Prerequisites: 200, 201.

***421. Latin American Economies. (3)** Gregory
Analysis in nontechnical terms of country characteristics and recent growth experience, balance of payments, commodity price stabilization, import substitution, multinational markets, inflation, land reform, development strategies, and role of foreign assistance.
Prerequisites: 200, 201.

***422. Economic Security. (3)** Therkildsen
Public and private annuity, unemployment compensation, workmen's compensation, and medical programs.
Prerequisite: 200 or consent of instructor.

***423. Latin American Topics. (3)** Gregory
Analysis of roles of private and public sectors in mobilizing resources for growth: savings and investment determinants, fiscal and monetary policies, inflation, foreign aid, multinational corporations; employment and unemployment, choice of technology and current issues of hemispheric interest.
Prerequisites: 420 or 421.

***424. International Economics. (3)** Tailby
Trade and balance of payment adjustments, theories of the gains from trade, policy issues.
Prerequisites: 200, 201, or consent of instructor.

***425. Trade Unionism in the United States. (3)** Cohen, Gregory
History of American labor movement. The labor management relationship with emphasis on the economics of collective bargaining.
Prerequisite: 320.

***426. Economics of the Labor Market. (3)** Gregory
Determinants of labor force, wage levels and structures, and employment; human capital theory and discrimination; economic consequences of trade union and government intervention.
Prerequisite: 300.

***427. Labor and Public Policy. (3)** Cohen
Development of public policy toward industrial relations and labor market problems. Emphasis upon economic implications.
Prerequisite: 320.

***428. Labor Market Institution. (3)**
Public institutions that affect the operation of the market. Background study and field work. Emphasis on Employment Security Office, Federal Mediation and Conciliation Service, National Labor Relations Board and other federal, state, and local agencies.
Prerequisite: 320 and/or permission of instructor.

***439. Topics in American Indian Economic Development. (1-6)** Staff
A course to offer selected topics in American Indian Economic Development, including the theory of such development and its practical application in a tribal organization.
Prerequisite: consent of instructor.

***440. Regional Analysis. (3)** Zink
Analysis of regional economies, economic models.
Prerequisites: 200, 201.

***442. Natural Resources. (3)** Ben-David, Brown
Land, water, mineral, energy resources; development, allocation, pricing; productivity and effects on national income and balance of payments.
Prerequisite: 300.

***445. Economics of the Budget Process. (3)** Boyle
(Also offered as Pub Ad 545.) Relationship of private and public sectors of the economy; allocation theory with respect to public resources; economic, political, and administrative aspects of government budgeting.
Prerequisite: 350 or consent of instructor.

***450. Comparative Economic Systems. (3)** Jonas
A critical analysis of the proposed major reforms of the existing economic system.
Prerequisites: 200, 201.

**451-452. Problems. (1-3, 1-3 hrs. per semester)**

***455. The Soviet Economic System. (3)** Jonas
Structure, institutions, growth rate, international position, and economic and military potentials of U.S.S.R. economy.
Prerequisites: 200, 201.

***460. Topics in U.S. Growth. (3)**
Using economic theory the course examines important issues in American economic development over time. Topics include among others: determinants of the spread of technological change; immigration and fertility patterns; role of government (property rights, regulation); development of factor markets.
Prerequisite: 365 or consent of instructor.

***465. Community and Regional Planning Methods.** [City Planning Methods.] **(3)**
(Also offered as CRP and Pol Sci 465.) Topics include perceptual form of the city; planning and decision-making theory; national and regional policy; public control over development; direct action techniques. This is a multidiscipline introduction to urban studies with emphasis on planning and control.

***466. Economics for City Planning. (3)**
(Also offered as CRP 466.) This course introduces quantitative methods of city and development planning. Topics include cost-benefit analysis, including heroic quantification and social physics (simultaneous design of transportation and land use).
Prerequisites: 200, 201.

***478. Seminar in International Studies. (3)** Slavin
(Also offered as Geog, M&CL, Pol Sci, and Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters.
Open only to seniors.

***485. Philosophical Foundations of Economic Theory. (3)** Hamilton
(See Ec-Ph 485.)
Prerequisites: 200, 201.

***495-496. Departmental Seminar. (3, 3)**
Problems in economic theory and their relationship with changing character of economy.
Prerequisite: undergraduates require approval of department.

**497-498. Reading for Honors. (3, 3)**
**499. Senior Honors Thesis. (4)**

**499. Senior Honors Thesis. (4)**

***500. Micro-Economic Theory. (3)** Gisser, Church
Prerequisites: Econ 300

***501. Advanced Micro-Theory. (3)** Gisser
Prerequisites: 407 or equivalent, 500, one year calculus, Math 314

***503. Seminar in Economic Theory and Applied Economics. (3)‡**
Prerequisite: permission of instructor.

***504. Quantative Analysis II. (3)**

***505. Macro-Economic Theory. (3)**
Prerequisites: 303,

***506. Advanced Macro-Economic Theory. (3)**
Prerequisites: 505, one year of calculus, Math 314

***507. Programming and Growth. (3)**
Prerequisites: 407 and Math 314.

***508. Data Construction and Evaluation in Economics. (3)** Brown
Prerequisites: 289, 407.

***509L. Econometrics/Laboratory. (3)** Ben-David, Brown
Prerequisites: Math 180, 181, 314, 345, and 346.

***510. Econometrics. (3)** Brown
Corequisite: 509.

***511. History of Economic Thought. (3)** Tailby
Prerequisite: graduate status in economics or consent of instructor.

***512. Economic History. (3)** Tailby
Prerequisite: graduate status in economics or consent of instructor.

***515. Theory of Money and Banking. (3)** Chung, Parker
Prerequisite: 303 or 315.

***516. Monetary Problems and Policies. (3)** Chung, Parker
Prerequisite: graduate standing in economics.

***520. Seminar in Labor Economics. (3)** Cohen, Gregory
Prerequisites: 320 or equivalent and consent of instructor.

***521. Comparative Labor Problems. (3)** Cohen

***526. Seminar in European Economic History. (3)**
(Also offered as Hist 526.)

***531. Standards and Levels of Living. (3)** Hamilton
Prerequisite: graduate status in economics or consent of instructor.

***532. The Theory of Consumption. (3)** Hamilton
Prerequisite: graduate standing in economics or consent of instructor.

***533. Seminars in Industrial Organization. (3)** Parker
Prerequisite: 300 or consent of instructor.

***540. Mineral Economics. (3)** Burness
Prerequisite: 500 or consent of instructor.

***542. Seminar in Natural Resource Planning. (3)** Ben-David
Prerequisite: 300 or 500.

***543. Seminar in Natural Resource Planning. (3)** Ben-David
Prerequisite: 303 or 505.

***544. Special Topics in Environmental Economics. (3)** Ben-David
Prerequisite: 300 or equivalent. {Fall}

****546. Economic Education. (2 or 4)** Parker
(Also offered as Bus Ed and SATE 546.) {Summer only}

***547. Mathematical Economics. (3)**
Prerequisites: 407 and 500. {Fall}

***548. Seminar in Mathematical Economics. (3)**
Prerequisite: 547. {Spring}

***551-552. Problems. (2-3, 2-3 hrs. per semester)**

***560. Theory of Public Finance. (3)** Boyle, Church, Therkildsen
Prerequisite: consent of instructor.

***562. State and Local Finance. (3)** Boyle, Church, Therkildsen
Prerequisite: 350 or graduate status in economics or consent of instructor.

***565. Seminar in Fiscal Policy. (3)** Boyle, Therkildsen
Prerequisite: graduate status in economics.

***570. Institutional Economics. (3)** Hamilton
Prerequisite: graduate status in economics or consent of instructor.

***578. Economic Planning. (3)** Jonas
Prerequisite: 303. {Spring}

***580. International Trade Theory. (3)**
Prerequisite: 424 or consent of instructor.

***582. Theories of Economic Development and Growth Models. (3)**

***583. Seminar in Economic Development with Particular Application to Latin America. (3)** Gregory
Prerequisite: graduate status in economics or consent of instructor.

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3)** Lieuwen, Merks, Needler, Schwerin
(Also offered as Hist, Pol Sc, and Soc 584.) {Spring

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# ECONOMICS-PHILOSOPHY

The combined major in economics and philosophy is an interdepartmental major administered jointly by the two departments. Students interested in this program should consult the Department of Economics or the Department of Philosophy.

This major is directed toward a deeper and fuller understanding of the theoretical phases of economics and toward the extension of philosophy into one of its traditional areas of interest, namely that of value theory and its application.

**MAJOR STUDY**

Students completing an economics-philosophy major are not required to have a minor. The minimum requirement is 45 hours, including Econ 200, 201, 300, 303, 315, and 360 or 450, and 3 hours to be selected from 320, 332, 340, 350, 422, or 424; Phil, 21 hours selected from courses chosen in consultation with your adviser; Econ-Phil 485.

**MINOR STUDY**

Not offered.

**CURRICULUM**

***485. Philosophical Foundations of Economic Theory. (3)** Hamilton
(Also offered as Phil 485.) Philosophical backgrounds of classical and neo-classical, socialist and communist, and institutionalist economics.
Prerequisite: Econ 201. {Spring 1981 and alternate years.}

# EDUCATION, ART

James Srubek, Chairperson
Mesa Vista 4023, 277-4112.

**PROFESSORS:**

Howard McConeghey, Ed.D., Michigan State University
Neal Townsend, M.A., University of New Mexico

**ASSOCIATE PROFESSORS:**

James Srubek, Ph.D., Pennsylvania State University
Beverly Schoonover, M.A., University of New Mexico

**ASSISTANT PROFESSOR:**

Phil Peterson, M.A., New York University

**MAJOR CERTIFICATION CURRICULUM - OPTIONS I AND II**
See pp. 38

**MINOR STUDY**

See pp. 39

**CURRICULUM**

**120. Techniques of Craft Education. (1-3)**
Beginning crafts and teaching methods for recreation situations. {Spring}

**214. Art in Elementary and Special Classrooms I. (3)**
Developing an understanding of the art process and the growth and development of children through art for teaching art in elementary and special classrooms. Sequel course is 215. {Summer, Fall, Spring}

**215. Art in Elementary and Special Classrooms II. (3)**
Continuation of Art Ed 214 with more emphasis on expanding art forms, media and concepts for art teaching in elementary and special classrooms.
Prerequisite: 214.

**220. Teaching Art in the Elementary School. (3)** Peterson
Philosophical, psychological, theoretical and practical concepts about teaching art in the elementary school, including observation of the involvement in art teaching situations. Initial screening course and prerequisite for 1-12 and 7-12 art certification curricula. {Fall, Spring}

**230.** [130.]**Techniques of Design Education. (3)**
Design in everyday life. {Fall}

**285. Recreation Arts and Crafts. (3)** Townsend
Exploration of recreational arts and crafts including application of techniques, materials, and methodology of teaching and supervising arts and crafts activities in all age groups of a heterogenous nature. Course includes laboratory and field experiences in preselected sites. Course designed to develop full potential of students for recreation. {Fall}

**293. Topics. (1-3)‡**
Courses on a variety of topics are offered according to need and interest. Different section numbers indicate different topics. {Offered upon demand}

**320. Teaching Art in Secondary School. (3)** McConeghey, Townsend
Philosophical, psychological, theoretical and practical concepts about teaching art in the middle/junior and senior high school, including observation of and involvement in art teaching situations. Additional screening course when indicated in individual cases.
Prerequisite: 220. {Fall, Spring}

**357. Media-Arts and Women. (3)**
(Also offered as Women St. 357.) Will present overview of women in art and media; will survey history of women in communications media; will serve as a workshop for developing skills; will interpret how the media influences status of women.
Prerequiste: WS 200

**391. Problems. (1-3)**
Individual problems are studied and researched under the supervision of a faculty member.
Permission of faculty member involved is required. {Summer, Fall, Spring}

**§400. Elementary Student Teaching in Art. (3, 6, 9, maximum 15)** Peterson, Schoonover
Directed and supervised student teaching in art at the elementary level (grades 1-6) in a school plus a seminar on campus dealing with theory and practice relevant to art in the elementary school.
Prerequisites: 220, 320, and approval of the Department's Director of Elementary Student Teaching. {Fall, Spring}

**414.** [421.]**Art Education in Elementary School Teaching. (3)** Schoonover, Peterson
Direct experience with the art process set in a theoretical context for elementary school teaching oriented toward curriculum development in art, integration of art with the rest of the curriculum, art as non-verbal communication and the multi-cultural aspects of art. {Summer, Fall, Spring}

**420. Art Education in Early Childhood. (3)** Peterson
Theory, methods, curriculum for teaching art with children ages 4-7 emphasizing the teachers response to the creative needs of young children as a part of their total growth and learning. {Spring}

**430.Studio Art in the School:_____. (3)** Srubek, Townsend, McConeghey, Peterson, Schoonover
Studio experience in art for school situations. Different art forms are emphasized in different offerings of the course—e.g., Studio Art in the School: Ceramics; Studio Art in the Schools: Weaving, etc. May be repeated for credit as studio area varies; may be taken twice with same studio area {Summer, Fall, Spring}

**§460. Student Teaching in the Middle/Junior High School (3, 6, 9)** Srubek, Townsend
Directed and supervised student teaching in art at the middle/junior high level (grades 6-9) in a school plus a seminar on campus dealing with theory and practice relevant to art in the middle/junior high school.
Prerequisites: 220, 320, 400, and approval of the Department's Director of Secondary Student Teaching. {Fall Spring}

**§461. Student Teaching in the Senior High School. (3, 6, 9)**Townsend, Srubek
Directed and supervised student teaching in art at the senior high level (grades 9-12) in a school plus a seminar on campus dealing with theory and practice relevant to art in the senior high school.
Prerequisites: 220, 320, 400, 460 and approval of the Department's Director of Secondary Student Teaching {Fall, Spring}

**465. Art and the Exceptional Child. (3)** Schoonover
(Also offered as Spec Ed 465.) Course designed to acquaint teachers with the value and therapeutic uses of art in special education classrooms and to acquaint art education majors with adaptions of art to various exceptional cases. {Fall}

**468. The Image and Imagination in Art Education and Art Therapy. (3)** McConeghey
Metaphorical aspect of art and reality, and importance of man's images in relation to art education and art therapy. Imaginal basis of memory and cognition, psychologic source of image in the unconscious and its fundamental importance in human motivation and experience. {Spring}

§ A maximum of 15 hours of student teaching **combined** (all levels) is allowed.

**470. Art in Multicultural Education. (3)** Peterson
Survey of the major cultural elements relating to the American Southwest and attempts to affect the inclusion of the cultural element into the teaching of art as well as provide a methodology and curricular component. {Fall, Spring}

**475. Art, Architecture and Environmental Education in the Schools. (3)**
(Also offered as Arch 462.) The use of art and architecture in the school curriculum. The aesthetics of the built environment in relation to design and behavior and the order and delicate design in nature and buildings. Design of learning environments are also explored. {Fall}

**492. Workshop. (1-4)‡**
Different workshops are offered about various aspects of art education according to interest and need. Different sections indicate different workshops.
Prerequisite: varies with workshop content. {Offered upon demand}

**493. Topics. (1-3)‡**
Courses on a wide variety of topics about art education are offered according to interest and need. Different sections indicate different topics.
Prerequisite: varies with course topic. {Offered upon demand}

**495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor.

***500. Seminar in Art Education. (1-3)‡** McConeghey, Srubek
{Fall}

***510. Curriculum Development in Art Education. (3)** McConeghey, Srubek
{Spring}

***514.** [521.]**Art Education in Elementary School Teaching. (3)** Schoonover, Peterson
{Summer, Fall, Spring}

***520. Art Education in Early Childhood. (3)** Peterson
{Spring}

***530. Studio Art in the School:_____ (3).** Srubek, Townsend, McConeghey, Peterson, Schoonover
May be repeated for credit as studio area varies. May be taken twice with same studio area. {Summer, Fall, Spring}

***561. Practicum in the Supervision of Instruction. (3)‡**
{Summer, Fall, Spring}

***565. Art and the Exceptional Child. (3)** Schoonover
(Also offered as Spec Ed 565.) {Fall}

***568. The Image and Imagination in Art Education and Art Therapy. (3)** McConeghey
{Spring}

***570. Art in Multicultural Education. (3)** Peterson
{Fall, Spring}

***575. Art, Architecture and Environmental Education in the Schools. (3)**
(Also offered as Arch 563.) {Fall}

***585. Research Applied to Art Education. (3)** Srubek
(Also offered as Ed Fdn 500.) {Fall}

***590. Current Trends and Issues in Art Education. (3)** McConeghey, Srubek
{Spring}

***591. Problems. (1-3, maximum of 6)**

***592. Workshop. (1-3)‡**
{Offered upon demand}

***593. Topics. (1-3)‡**
{Summer, Fall, Spring}

***595. Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisite: permission of instructor.

***598. Directed Reading in Art Education. (1-3, to a maximum of 6)**
{Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)** McConeghey, Srubek
See the Graduate Programs Bulletin for total hour requirements.

***610. Curriculum Development in Art Education. (3)** Srubek, McConeghey
Prerequisite: Permission of instructor. {Spring}

***696. Internship. (3-6, maximum of 12)**

***698. Directed Readings in Art Education. (1-6, to a maximum of 12)** McConeghey, Srubek
{Summer, Fall, Spring}

***699. Dissertation. (3-12 hrs. per semester)** McConeghey, Srubek
See the Graduate Programs Bulletin for total hour requirements.

# EDUCATION, EDUCATIONAL ADMINISTRATION

Ronald E. Blood, Chairperson
Education 207, 277-4533.

**PROFESSORS:**

Ronald E. Blood, Ph.D., Claremont Graduate School
Richard E. Lawrence, Ed.D., Columbia University
Paul A. Pohland, Ph.D., Washington University
Alex Sanchez, Ed.D., New Mexico State University
Richard F. Tonigan, Ed.D., Columbia University
Horacio Ulibarri, Ed.D., University of New Mexico

**ASSOCIATE PROFESSORS:**

Ignacio R. Cordova, Ed.D., University of New Mexico
Richard A. King, Ph.D., State University of New York
Carolyn J. Wood, Ph.D., Washington University

**ASSISTANT PROFESSORS:**

Joseph Blase, Ph.D., Syracuse University
Manuel J. Justiz, Ph.D., Southern Illinois University

**LECTURER:**

Ernest S. Stapleton, M.A., University of New Mexico

The programs offered in this department are at the graduate level. For information concerning these programs, consult the Graduate Programs Bulletin.

**CURRICULUM**

***492. Workshop. (1-4)** Staff
Carries graduate credit when specifically approved by the Office of Graduate Studies. Consult this catalog and the Graduate Programs Bulletin for restrictions. {Offered upon demand}

***493. Topics. (1-3)** Staff

***495. Field Experiences. (3-6, maximum of 12)** Staff
(Also offered as Art Ed, Bus Ed, Ed Fdn, Phys Ed, Recrea, H Ec Ed, SATE 495.) Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor. Summer, {Fall, Spring}

***509. Introduction to Educational Administration. (3)** Blood, Pohland, Wood
{Summer, Fall, Spring}

***510. School-Community Relations. (3)** Lawrence
Prerequisite: 509. {Summer, Fall, Spring}

***512. Public Education in New Mexico. (3)** Cordova, Stapleton, Ulibarri
{Summer, Fall, Spring}

***520. The School Principalship. (3)** Blood
Prerequisite: 509. Summer, Fall, Spring

***521. Public School Finance. (3)** King
{Summer, Fall}

***522. School Business Management. (3)** Staff
{Summer, Fall, Spring}

***526. Educational Planning and the School Plant. (3)** Tonigan
{Summer, Spring}

***530. Administration of Adult Education. (3)** Cordova, Ulibarri
{Fall}

***531. Administration of Staff Personnel. (3)** Pohland, Wood
Prerequisites: 509, 520. {Summer, Spring}

***532. Current Educational Problems. (3)** Staff
{Offered upon demand}

***560. Supervision of Instruction (Elementary and Secondary). (3)** Pohland, Wood
(Also offered as El Ed 560.)
Prerequisites: 509, 520 for administration majors. {Summer, Fall, Spring}

***561. School Law. (3)** King
Prerequisite: 509. {Summer, Fall, Spring}

***564. School and Community Surveys. (3)** Tonigan
Prerequisite: 510. {Summer, Fall}

***571. State and Federal Educational Administration. (3)** Lawrence
Prerequisites: 509, 510. {Summer, Spring}

***581. Seminar in Educational Administration. (3)** Staff
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***591. Problems. (1-3, maximum of 6)** Staff
{Summer, Fall, Spring}

***592. Workshop in Educational Administration. (1-4)** Staff
{Offered upon demand}

***593. Topics. (1-3)** Staff
{Summer, Fall, Spring}

***595. Advanced Field Experiences. (3-6, maximum of 12)** Staff
Prerequisite: acceptance into a graduate program and permission of instructor. {Offered upon demand}

***598. Directed Readings in Educational Administration. (3-6, maximum of 6)**

***599. Master's Thesis. (1-6 hrs. per semester)** Staff
See Graduate Programs Bulletin for total credit requirements.

***605. Qualitative Research in Education. (3)** Pohland
(Also offered as Ed Fdn 605.)
Prerequisite: Ed Fdn 501 or equivalent. {Fall}

***626. Educational Buildings and Equipment. (3)** Tonigan
Prerequisite: 526. {Offered upon demand}

***629. Seminar for Practicing School Administrators. (1-3)** Staff
{Offered upon demand}

***630. Administration in Higher Education. (3)** Blood, Justiz, Lawrence
Prerequisite: permission of instructor. {Fall}

***695. Field Experiences in Educational Administration. (1-6, maximum 6)** Staff
{Offered upon demand}

***696. Internship. (3-6, maximum of 12)**

***698. Directed Readings in Educational Administration. (3-6, maximum of 12)**

***699. Dissertation. (3-12 hrs. per semester)** Staff
See the Graduate Programs Bulletin for total hour requirements.

# EDUCATION, EDUCATIONAL FOUNDATIONS

Albert W. Vogel, Chairperson
Education Office Building 215, 277-5141

**PROFESSORS:**

Mary B. Harris, Ph.D., Stanford University
Vera P. John-Steiner, Ph.D., University of Chicago
Wayne P. Moellenberg, Ed.D., Colorado State College
James C. Moore, Ph.D., Arizona State University
Paul E. Resta, Ph.D., Arizona State University (Associate Dean)
Albert W. Vogel, Ed.D., American University
John T. Zepper, Ed.D., University of Missouri

**ASSOCIATE PROFESSORS:**

David L. Bachelor, Ph.D., University of Chicago
Peggy J. Blackwell, Ph.D., Texas Technological University
Candace G. Schau, Ph.D., Iowa State University
Rupert A. Trujillo, Ed.D., University of New Mexico (Dean, Continuing Education)
Guy A. Watson, Ed.D., University of Southern California

**ASSISTANT PROFESSORS:**

Gladys Levis-Pilz, Ph.D., Northwestern University
Nevada W. Thomason, Ed.D.,University of Colorado
Andrea Vierra, Ph.D., University of New Mexico

**PROFESSOR EMERITI:**

James G. Cooper, Ed.D., Stanford University
Louis A. Rosasco, Ed.D., New York University

**CURRICULUM**

**181. Seminar for Returning Women Students. (3)**
(Also offered as Women St 181.) Designed for women who are entering or returning to school after an interruption; will identify problems associated with re-entry; will review academic skills; will provide an opportunity to begin to define educational needs and issues.

**193. Topics. (1-3)**

**262. Introduction to Linguistic Analysis. (3)**
(See Ling 292L.)

**290. Foundations of Education. (3)** Bachelor, Vogel, Zepper
An introduction to the philosophical, social, historical, and comparative foundations of education. {Summer, Fall, Spring}

**291. Problems. (1-3)**

**293. Topics. (1-3)**

***303.** [300.]**Human Growth and Development. (1-3)** Harris, John-Steiner, Levis-Pilz, Moellenberg
Principles of growth and development and implications for the school curriculum. {Summer, Fall, Spring}

**310. Learning and the Classroom. (3)** Blackwell, Harris, John-Steiner, Moellenberg
The basic principles of learning and their application to classroom situations. {Summer, Fall, Spring}

***353. Bilingual Education: History and Theory. (3)**
(Also offered as Ling 353.) Survey of multilingual education throughout the world; principles and practices.
Prerequisite: an introductory linguistic course.

***362. Language Testing.** [Language Testing and Multilingual Education.]**(3)**
(Also offered as Ling 362.) Survey of language testing procedures with special application in multilingual and bilingual education programs.
Prerequisite: an introductory linguistics course; some knowledge of statistics recommended.

**374. Principles of Educational and Psychological Measurement. (3)** Blackwell, Harris, Moellenberg, Moore
An analysis of the educational and psychological tests used in a school testing program. {Summer, Fall, Spring}

**383. Education of the Mexican-American: Trends, Issues, Problems. (3)**
(Also offered as Spec Ed 383.)

**384. Women and Self-Education. (3)**
An analysis of how to take the tools of learning into one's own hands in order to change women's second-class position in society.
Pre- or corequisite: at least one other course in women studies or education. {Fall, Spring}

**391. Problems. (1-3)**

***401. U.S. Politics and Education. (3)** Garcia
(Also offered as Pol Sci 303.) A course for the education student and educator on politics and government emphasizing the relationships between these and education. Focuses upon the politics of education, political education in the schools, and the effects of education on political systems.

***403. Principles of Human Development. (3)** Mollenberg
A survey of major developmental theories and their implications for educational practices. Intended for advanced undergraduates, in-service teachers, and graduate students with limited background in developmental theory. {Spring}

***410. Principles of Classroom Learning. (3)** Moellenberg
A survey of major learning theories and their implications for educational practices. Intended for advanced undergraduates, in-service teachers, and graduate students with limited background in learning theory. {Fall}

***411. History of American Education. (3)** Vogel, Zepper
The development of American education from the Colonial period to the present. An analysis of the contributions of teachers, statesmen, philanthropists, psychologists, sociologists, and philosphies to educational thought and practice in the U.S.A.
Prerequisite: a course in American history. {Offered upon demand}

***412. History of Education. (3)** Vogel, Zepper
The development of education in world civilizations (with the exception of the U.S.A.). An analysis of educational thought and practice in historical perspective.
Prerequisite: course in world history. {Offered upon demand}

**415. Philosophies of Education. (3)** Vogel Zepper
A survey of philosophical systems and their application to education.
Prerequisite: 290 or equivalent. {Summer, Fall, Spring}

***420. Small Group Communication. (3)** Rosenfeld
(Also offered Sp Com 425.) Theory and practice of human interaction in small groups, including role behavior, conflict resolution, nonverbal communication, and phases in group development; special application to the classroom. {Spring}

***421. Sociology of Education. (3)** Bachelor
(Also offered as Soc 421.) The comparative study of the structure and functioning of educational institutions in the developing and developed societies. {Summer, Fall, Spring}

***422. Education and Anthropology. (3)** Levis-Pilz
An overview of educational implications from the field of anthropology. {Fall, Spring}

***456. Science, Technology, and Human Values: Implications for Education. (3)**
(Also offered as I Ed, SATE 456.) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.

***474. Principles of Educational and Psychological Measurement.** [Evaluation in the School Curriculum.]**(3)** Blackwell, Harris, Moellenberg, Moore
An analysis of the educational and psychological tests used in a school testing program. {Summer, Fall, Spring}

***483. Education Across Cultures in the Southwest. (3)**
(Also offered as SATE and El Ed 481.) {Summer, Fall, Spring}

**486.** [386.]**Psychological Development of Women. (3)**
Prerequisites: an introductory course in psychology and/or a course in the psychology of personality. An introductory course in women's studies is recommended but not necessary. {Spring}

**487. Sexism in Education. (3)**
(Also offered as Women St 487.) Course will focus on an historical and sociological analysis of discrimination as well as the psychological effects on children and adults. Will include the development of sex roles, the effects of curricula materials and Title IX.
Prerequisites: 290, Women St 200, and Permission of instructor.

***492. Workship in Foundations of Education. (1-4)‡**

***493. Topics. (1-3)**

***495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***500. Research Applications to Education. (3)** Levis-Pilz, Vogel, Zepper
(Also offered as Art Ed 585.)

***501. Fundamental Statistics in Education I.** [Research Methods in Education.]**(3)** Blackwell, Harris, Moellenberg, Moore

***503. Seminar in Human Growth and Development. (3)** Blackwell, Harris, Moellenberg

***504. Computer Applications to Education. (3)** Schau

***505. Planning and Conducting Educational Research. (3) Prerequisite: 501 or equivalent**

***507. Reseach Design in Health, Physical Education, and Recreation. (3)**
(Also offered as PE 507.)

***510. Seminar in Classroom Learning. (3)** Blackwell, Harris, Moellenberg

***515. Philosophies of Education. (3)** Vogel, Zepper
Graduate students taking this course for certification only should enroll in Ed Fdn 415.

***516. Educational Classics. (3)** Zepper

***517. Educational Ideas in Literature. (3)** Vogel

***518. Comparative Education. (3)‡** Bachelor, Zepper

***533. Behavior Modification in Education. (3)** Blackwell, Harris

***555. Seminar in Educational Linguistics. (1-3)‡** John-Steiner, Oller
(Also offered as Ling 555.)

***562. Seminar. (3)‡**
(Also offered as Ling 562.)

***563. Seminar in Language Acquisition. (3)**
(Also offered as Ling 563.)

***574. Theory and Construction of Educational Measures. (3)** Blackwell, Harris, Moore

***581. Seminar: Sociology of Education. (3)** Bachelor
(Also offered as Soc 521.)

***586.** [386.]**Psychological Development of Women. (3)**
Prerequisite: an introductory course in the psychology of personality. An introductory course in women's studies is recommended but not necessary. {Spring}

***591. Problems. (1-3 hrs. each semester)**

***592. Workshop in Foundations of Education. (1-4)‡**
For degree restrictions see p. 37 of this catalog or consult the Graduate Programs Bulletin. {Offered upon demand}

***593. Topics. (1-3)‡**

***595. Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***598. Directed Readings in Educational Foundations. (3-6, maximum of 6)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See Graduate Programs Bulletin for total credit requirements.

***603. Statistical Design and Analyses in Education.** [Research Design and Statistics in Education.]**(3)** Blackwell, Harris, Moore

***604. Multiple Regression Techniques as Applied to Education.** [Multivariate Design and Analysis in Educational Research.]**(3)** Blackwell, Moore

***605. Qualitative Research in Education. (3)**
(Also offered as Ed Admin 605.)
Prerequisite: 501 or equivalent. {Fall}

***606. Statistical Designs and Analyses for Multiple Dependent Measures. (3)** Schau
Prerequisites: 603 and 604 or permission of instructor. {Fall}

***615.** [515.]**Contemporary Philosophies of Education.** [Comparative Philosophies of Education.]**(3)** Vogel, Zepper

***645. Advanced Seminar in Foundations of Education. (3)‡**

***650. Dissertation Seminar. (1-3)** Harris, Resta

***696. Internship. (3-6, maximum of 12)**

***698. Directed Readings in Educational Foundations. (3-6, maximum of 12)**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

## EDUCATION, LIBRARY, MEDIA

The area of library/media includes library science and audio-visual courses. Three programs in library science are offered: a minor of 24 semester hours credit for undergraduates in elementary and secondary education, an outside minor of 21 hours for undergraduates in the College of Arts and

Sciences. Students interested in certification as a school library/media specialist should contact the Department of Educational Foundations for current requirements.

**MAJOR STUDY**
Not offered.

**MINOR STUDY FOR UNDERGRADUATES IN EDUCATION**
Consult Educational Foundation Department Chairperson.

**MINOR STUDY FOR UNDERGRADUATES IN ARTS AND SCIENCES**
Consult Educational Foundations Department Chairperson.

235. Video Laboratory for Educators. (1) Watson
Laboratory instruction and practice in the operation of portable 1/2", color video recording and editing of individual tapes. Lab fee.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**247. Library and Media for Educators.** [Introduction To The Library.]**(3)**
An introductory course for educators. This course will explore the resources of library and media centers.
Not intended for Library/Media certification. {Fall, Spring}

**391. Problems. (1-3)**
Prerequisite: permission of instructor.

**424. Fundamentals of Library Science. (3)**
This basic course in library media is to give students knowledge, skills, and motivation to integrate people, materials, equipment and facilities into the school curriculum.

**425. Reference and Bibliography. (3)**
Study of materials and methods for locating information in general works, encyclopedias, dictionaries, indexes, biographical works, media guides, and other major tools in subject fields. {Fall}

**427. Classification and Cataloging. (3)**
Study of the purpose, history, theory, and principles of classification, cataloging, and general arrangement of books and other media. Practical application of the Dewey Decimal classification and Sears List of Subject Headings to both book and nonbook materials. {Summer, Spring}

**432. Production and Utilization of Instructional Materials. (3)**
Includes training in the use of media production and display equipment, production of graphic materials, overhead transparencies, slides, S8mm motion pictures, audio recordings, basic principles of black-and-white photography and criteria for effective design and use of media materials. Lab fee required. {Summer, Fall, Spring}

**433. Instructional Design and Development-A Systems Approach.** [Audio Visual Methods and Technology.]**(3)**
Application of instructional design and development principles to the production of mediated units of instruction. Includes a systematic approach to specifications of content and objectives, assessment of entering behavior, determination of strategy, organization of groups, allocation of time and space requirements, selection of appropriate media resources, and evaluation of performance. Students will be required to produce one packaged unit of instructions.
Prerequisite: 432 recommended as introductory course. {Fall, Spring}

**434. TV Techniques and Use in Education. (3)** Watson
Research into education uses of TV, operation of portable TV equipment; grapic, audio, lighting lab, and editing lab; planning and producing a Storyboard script and producing a video tape program. Lab fee.
Prerequisite: 432 recommended as introductory course. {Offered once each year.}

***435. Video Laboratory for Educators. (1)**
Laboratory instruction and practice in the operation of portable, 1/2", color video recording and editing equipment. Students will record and edit individual tapes. Lab fee.
Prerequisite: permission of instructor required. {Summer, Fall, Spring}

**436. S8mm Film-Production and Use in Learning Environments. (3)** Watson
Research on use and value of film in education; social, cultural, and experiental variables affecting learning from film. Operation and use of S8mm cameras, editors, and projectors; principles of design, scripting, and Storyboard preparation; lighting, editing, and animation labs, production of two films. {Offered once a year}

**437. Selection of Materials for Libraries and Media Centers. (3)**
Study of the principles of selection and evaluation for developing collections of print and nonprint materials; includes acquisition policies, criteria, and tools for selection. {Summer, Spring}

**438. Still Photography Techniques and Use in Education. (3)**
Research into uses and values in education; research related to effect of culture, social level, and experience on the interpretation of photography; operation of 35mm cameras; processing film; printing and enlarging; lighting, composition mounting prints; teaching photography to students and inexpensive substitutes for photo equipment. Lab fee.
Prerequisite: 432 recommended as introductory course. {Offered once each year}

**441. Children's Literature. (3)**
(Also offered as El Ed 441.)
Pre- or corequisite: El Ed 331. {Summer, Fall, Spring}

**451. Books and Related Materials for Young Adults. (3)**
A survey of books and nonbook materials suitable for students of juniors and senior high school age. Emphasis on utilization and evaluation of materials, adolescent reading, viewing and listening interest. {Fall}

**457. Government Documents. (1-3)**
Introduction to U.S. federal, state, and international government publications, the acquisition, organization, and reference service of government publications, and the field of government document librarianship. {Offered upon demand}

**460. The Organization and Administration of Media Centers. (3)**
Study of the organization and management of media centers, of facility design and services related to the production and distribution of materials and equipment. {Summer, Spring}

**492. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Office of Graduate Studies. Consult this catalog and the Graduate Programs Bulletin for restrictions. {Offered upon demand}

***524. Fundamentals of Library Science. (3)**

***525. Reference and Bibliography. (3)**

***527. Classification and Cataloging. (3)**

***532. Production & Utilization of Instruction Materials. (3)**

***533. Instructional Design and Development - A Systems Approach. (3)**
Prerequisite: 432 recommended as introductory course.

***534. TV Techniques and Use in Education. (3)**

***536. 8mm Film Production and Use in Learning Environment. (3)**

***537. Selection of Materials for Libraries and Media Centers. (3)**

***538. Still Photography Techniques and Use in Education. (3)**
Prerequisite: 432 recommended as introductory course.

***541. Children's Literature. (3)**

***551. Books and Related Materials for Young Adults. (3)**

***557. Government Documents. (1-3)**

***560. Organization and Administration of Media Centers. (3)**

***592. Workshop. (1-4)**
Consult the Graduate Programs Bulletin for restrictions.

# ELEMENTARY EDUCATION

Marlis Mann, Chairperson
Mesa Vista 2043, 277-4114

**PROFESSORS:**

F. Keith Auger, Ed.D., University of Illinois
David W. Darling, Ed.D., University of Texas
Mari-Luci Jaramillo, Ph.D., University of New Mexico
Donald E. Kelly, Ed.D., Arizona State University
Catherine E. Loughlin, Ed.D., Rutgers University
Paul W. Tweeten, Ph.D., University of Iowa

**ASSOCIATE PROFESSORS:**

Dean G. Brodkey, Ed.D., University of California
Guillermina Engelbrecht, Ph.D., Arizona State University
Marlis Mann, Ed.D., Arizona State University
Leroy Ortiz, Ph.D., University of New Mexico
Anita Pfeiffer, M.A., University of Arizona
Sara Dawn Smith, Ph.D., University of Maryland
Richard Van Dongen, Ed.D., University of New Mexico

**ASSISTANT PROFESSORS:**

Bess Altwerger, M.A., Jersey City State College
Luisa Chavez, Ph.D., University of New Mexico
Zelda Maggart, Ph.D., University of New Mexico
Patricia A. Oxford, Ed.D., Texas Tech University
Patrick B. Scott, Ed.D., Columbia University

**EMERITI FACULTY:**

Harold D. Drummond, Ed.D., Stanford University
Marie Hughes, Ed.D., Stanford University
Miles V. Zintz, Ph.D., University of Iowa

**CURRICULA**
See p. 39

**§128. Directed Experience with Children for Auxiliary Personnel, Level I. (1-6).**
Designed to provide classroom experiences to adults working with children. Student has opportunity to develop skills in theory and practice which accomodates the learning styles of children.

**§192. Workshop: The Paraprofessional in the Classroom. (1-6)**
To be taken concurrently with Elementary Education 128; Level I and provides the cognitive referents for the classroom experiences. Enables the student to gain practical and theoretical knowledge.

**§200. Directed Experience with Children for Auxiliary Personnel, Level II. (1-6)**
Provides the sequel necessary to extend skills introduced in Elementary Education 128, and the opportunity for students to initiate extensive development of activities, classroom management, and teacher skills.

**291. Problems. (1-3)**
Prerequisite: permission of instructor.

**§292. Workshop: Working with Children in Elementary Schools. (1-6)**
Offered to follow Elementary Education 192 and to correlate with Elementary Education 200. Offers the opportunity for students to do extensive investigations regarding teaching techniques, child development and classroom organization.
Prerequisite: 192.

**293. Topics. (1-3)**

**298. Music for the Elementary Teacher. (3)**
(Also offered as Music Ed 298.) Designed to prepare elementary classroom teachers to teach music education in a self-contained classroom in traditional and open situations. {Fall, Spring}

**300. Bilingual Teaching Methods-Materials and Techniques. (3-9)** Chavez, Jaramillo, Ortiz
Involves theory and practice in bilingual education emphasizing the Spanish language and culture dimension of the bilingual program.
Prerequisite: admission to Elementary Education, Bilingual Minor Program. {Spring}

**305. Teaching in the Kindergarten—Primary Years. (3)**
Engelbrecht, Loughlin, Mann, Oxford
Strategies and materials of effective learning experiences and classroom organization for young children. {Summer, Fall, Spring}

**319. Physical Education in the Elementary School. (3)**
(Also offered as PE 217.) 4 class meetings a week. {Summer, Fall, Spring}

**321L. Teaching of Social Studies in the Elementary School. (3)** Auger, Kelly, Ortiz, Pfeiffer
Development of conceptual framework for study of community- based curriculum with emphasis on the diverse cultures of the southwest and value clarification. Supervised work with children allows for in-depth analysis of both content and process. 3 lectures, 1 hr. lab. {Fall, Spring}

§ Open to students in the A.A. in Education (Elementary) program only.

**331L. Teaching of Reading in the Elementary School. (3)** Altwerger, Oxford, Van Dongen
Establishing a theoretical framework for exploring various approaches to reading/language development, instruction and evaluation in multicultrual classroom settings. 3 lectures, 1 hr. lab. {Fall, Spring}

**333L. Teaching Oral and Written Language in the Elementary School. (3)** Engelbrecht, Chavez
Study of oral and written forms of language. Background theory in language development and use in teacher-child interactions is presented and followed by carefully designed experiences with children. 3 lectures, 1 hr. lab. {Fall, Spring}

**341. Techniques of Literary Presentations. (2-3)** Van Dongen
Exploration of the art and materials of storytelling in schools and recreation centers. Folk and fairy tales, myths, legends, fables, epics and hero tales, and realistic stories will be studied, presented, and evaluated. {Offered upon demand}

***353L. Teaching of Science in the Elementary School. (3)** Chavez
Methods, processes, content and management of children's science observation, exploration discovery, and invention; attitudes of inquiry, and wonderment. Science integrated with math and other areas of life. 3 lectures, 1 hr. lab. {Fall, Spring}

**361L. Teaching of Mathematics in the Elementary School. (3)** Scott
Strategies and materials appropriate for traditional and innovative instructional programs in elementary school mathematics. Supervised work with children allows for in-depth analysis of both content and process.
Prerequisite: see Department of Mathematics. 3 lectures, 1 hr lab. {Fall, Spring}

**391. Problems. (1-3)**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**400. Student Teaching in the Elementary School. (3-6-9-12-15)** Staff
Pre- or corequisite: 321L, 331L, 333L, 353L, 361L. See additional requirements on p. 40. Special fee of $10 is charged. {Fall, Spring}

***421. The Social Studies Program in the Elementary School. (Estudios Sociales en las Escuela Primaria.) (3)** Kelly, Ortiz
Overview and development of the social studies curriculum within the contexts of the elementary school program and multicultural community settings.
Prerequisite: 321L. {Summer 1981 and alternate years, Fall}

***431. The Reading Program in the Elementary School. (El Programa de Lectura en la Escuela Primaria.) (2 or 3)** Altwerger, Maggart, Oxford, Van Dongen
Establishing a theoretical framework for exploring various approaches to reading/language development, instruction and evaluation in multicultural classroom settings. Prerequisite: 331L. {Summer, Fall, Spring}

***433. Oral and Written Language Program in the Elementary School. (Lenguaje Oral y Escrito en la Escuela Primaria.) (2-3)** Chavez, Engelbrecht
The development extension/elaboration and analysis of the language arts in both home language and English language. Creative methods and materials {Summer, Fall}

***435L. Remedial Reading Problems. (3)** Altwerger, Maggart, Van Dongen,
(Also offered as SATE 435L.) Designed to meet needs of elementary classroom teachers in understanding and teaching children with reading problems; includes a supervised tutoring experience of 3 hours weekly. Includes 3 hrs. supervised laboratory each week.
Prerequisite: El Ed 431 or permission of instructor. 3 lectures, 1 hr. lab. {Summer, Fall, Spring}

**436. Diagnois and Prescription in Elementary School Reading. (3)** Maggart, Van Dongen, Zintz
Study and administration of a variety of formal and informal assessment procedures. Collected data is reviewed for instruction. Designed to provide experiences for teachers in the use of many informal reading diagnostic instruments and techniques.
Prerequisite: El Ed 331 or permission of instructor. {Summer, Fall, Spring}

***441. Children's Literature. (Literature Infantil.). (3)** Van Dongen
(Also offered as Lib/Media 441.)
Pre- or corequisite: 331L. {Summer, Fall, Spring}

***442. Games and Songs of New Mexico. (3)** Chavez
Course to cover theory and content of the games and songs of culture in which course is offered.
Prerequisite: proficiency in the language in which the course is taught. {Summer, and upon demand}

***448. Career Education. (3)** Wagoner, Runge
(Also offered as SATE 448.) New career education concepts, objectives, models occupational clusters, USOE, state and local curriculum materials and implementation guidelines. Class activities include use of resource persons, field trips, and contacts with the business community. {Offered upon demand}

***453. The Science Program in the Elementary School. (3)** Chavez, Tweeten
Prerequisite: 353L. {Summer 1981 and alternate years, and upon demand}

***454. Environmental Education through Camping. (3)**
Designed to teach both the methods and techniques of teaching environmental education through camping to elementary school students, and to acquaint recreation personnel with the operation of a school-camp program. {Offered upon demand}

***461. The Mathematics Program in the Elementary School. (3)** Scott
Prerequisite: 361L. {Summer, Spring}

***470. Supervision of Student Teaching in Elementary Schools. (3)** Auger, Smith
Overview of teacher preparation programs including program of UNM. Restricted to cooperating teacher working with program.
Prerequisite: graduate or non-degree status.

***481. Education Across Cultures in the Southwest. (3)** Ortiz, Pfeiffer, Zintz
(Also offered as SATE 481.) {Summer, Fall, Spring}

***482. Teaching English as a Second Language. (3)** Brodkey, Pfeifer, White
(Also offered as SATE 482.)
Prerequisite: Ling 292 or Engl 440 (may be taken concurrently) and permission of instructor. {Summer, Fall, Spring}

***490. Music for the Pre-school Child.(2)**
(Also offered as Music Ed 443.)

***492. Workshop. (Taller Pedagogico.) (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions consult the Graduate Programs Bulletin. {Offered upon demand}

***493. Topics. (1-3)‡**
{Offered upon demand}

***495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experience in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**497. Reading and Research in Honors. (3-6)**
Prerequisite: see p. 36. {Fall, Spring}

***500. Advanced Instructional Strategies. (3)** Auger, Loughlin, Ortiz
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***501.** [405.]**Curriculum for Early Childhood. (3)** Englebrecht, Loughlin, Mann, Smith
Prerequisite: H Ec 408L. {Summer, Fall, Spring}

***505. Seminar in Early Childhood Education. (3-12)** Englebrecht, Loughlin, Mann, Smith
Prerequisite: 501 and permission of instructor. {Summer, Fall, Spring}

***506. The Middle School. (3)** Kelly, Smith
(Also offered as SATE 506.)

***507. Developing Curriculum for Middle Schools. (3)** Kelly, Smith
(Also offered as SATE 507.) {Fall or Spring upon demand}

***508. Instructional Strategies for Middle Schools. (3)** Kelly, Smith
(Also offered as SATE 508.) {Fall or Spring, Summer upon demand}

***511. Curriculum in the Elementary School. (3-12)** Auger, Kelly, Ortiz, Smith
{Summer, Fall, Spring}

***512. Arranging Learning Environments. (3)** Auger, Loughlin, Ortiz
Prerequisite: permission of instructor. {Offered upon demand}

***515. Remedial Teaching Techniques. (3)** Altwerger, Maggart
(Also offered as SATE 515.)

***521. Seminar in the Social Studies. (3-12)** Kelly, Ortiz, Pfeiffer

***531. Seminar in Teaching Reading. (3-12)** Altwerger, Maggart, Van Dongen, Zintz
{Fall and alternate Summers}

***532. The Reading Process. (3)** Maggart, Van Dogen, Zintz
(Also offered as SATE 532.)
Prerequisites: El Ed 531 and 535L and permission of instructor. {Spring 1982 and alternate Summers.}

***533. Seminar in the Language Arts. (3-12)** Engelbrecht, Ortiz, Van Dongen

***535L. Practicum in Learning Disabilities (Reading). (3)** Altwerger, Maggart
(Also offered as SATE 535L.). Includes 3 hrs. supervised laboratory each week.
Prerequisites: 435L and El Ed 531 or SATE 520. 3 lectures, 1 hr. lab. {Summer, Fall}

***538. Teaching Reading in the Content Fields. (3)** Maggart, Van Dongen, Zintz
(Also offered as SATE 438.)

***541. Seminar in Children's Literature. (3-12)** Van Donger

***542. Principles of Curriculum Development. (3)** Auger, Kelly, Smith
(Also offered as SATE 542.)

***553. Seminar in Teaching Elementary Science. (3-12)** Chavez, Tweeten

***560. Supervision of Instruction (Elementary). (3)** Auger Kelly, Smith
(Also offered as Ed Adm 560.)

***561. Seminar in Teaching Mathematics. (3-12)** Scott

***562. Practicum in the Supervision of Instruction. (3** Auger, Smith
(Also offered as SATE 562.) May be repeated for a maximum of 12 hrs. {Fall, Spring}

***581. Bilingual Education. (3)** Chavez, Engelbrecht, Ortiz Pfeiffer
(Also offered as SATE 581.) {Fall and upon demand}

***582. Curriculum Development for Bilingual/Bicultura Programs. (3)** Chavez, Engelbrecht, Ortiz, Pfeiffer
(Also offered as SATE 582.) Offered with either Spanish English emphasis (competency in Spanish language required) or with Navajo-English or other Southwest Indian language and English.
Prerequisite: 581 and permission of instructor. {Spring and upon demand}

***591. Problems. (1-3, maximum of 6)**
{Summer, Fall, Spring}

***592. Workshop. (1-4)**
For degree restriction consult the Graduate Program Bulletin.

***593. Topics. (1-3)**

***595. Field Experience. (3-6, maximum of 12)**
Prerequisites: acceptance into a graduate program and permission of the instructor. {Summer, Fall, Spring}

***598. Directed Reading in Elementary Education. (3-6 maximum of 6)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***601. Curriculum Appraisal and Improvement of School Program (3)** Kelly, Smith
(Also offered as SATE 611.)

***643. Curriculum Theory Seminar. (3)** Drummond, Kelly Smith
(Also offered as SATE 643.)
Prerequisite: permission of instructor.

***696. Internship. (3-6, maximum of 12)**
{Summer, Fall, Spring}

***698. Directed Readings in Elementary Education. (3-6, maximum 12)**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# EDUCATION, GUIDANCE AND COUNSELING

Darrell E. Anderson, Chairperson
Mesa Vista 4021, 277-4535

**PROFESSORS:**

Darrell E. Anderson, Ph.D., University of Nebraska
Lewis A. Dahmen, Ed.D., Arizona State University
William R. Fishburn, Ed.D., University of Arizona
Wayne R. Maes, Ph.D., Michigan State University
Robert Micali, Ed.D., Rutgers University

**ASSOCIATE PROFESSORS:**

Marion J. Heisey, Ph.D., Kent State University
John R. Rinaldi, (Assistant Dean), Ed.D., Texas Tech University
Gordon A. Zick, Ed.D., University of Illinois

**ASSISTANT PROFESSORS:**

V. O. Long, Ph.D.,Washington State University
Clifford O. Morgan, Ph.D., University of Arizona

**PROFESSOR EMERITUS:**

George L. Keppers, Ed.D., University of Colorado

**CURRICULUM**

***410. Rehabilitation Concepts and Process. (3)** Morgan
Provides the philosophical, historical, and legislative foundations of rehabilitation, including an overview of rehabilitative services. Consideration of definitions of rehabilitation and handicapping conditions: physical, emotional, mental, social, and economic.
Prerequisite: permission of instructor. {Fall}

***413. Career Development in the Classroom. (3)** Long
To familiarize the student with the world of work and career development and how to integrate this knowledge into the regular classroom, with emphasis on the group discussion approach. Appropriate for all levels of instruction. {Fall}

**420.** [415.]**Foundation of Counseling. (3)** Staff
Designed to provide the student with a basis for examination and development of a meaningful philosophy of counseling services, and to understand the principles of counseling practices in keeping with that philosophy.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**430. Dynamics of Human Behavior. (3)** Maes, Zick
To permit the student to achieve a broader base with respect to understanding of the various theorists and theories of personality which, in turn, would allow for greater concentration in the areas of philosophy and techniques of counseling. {Summer, Fall, Spring}

**431. Theories of Human Interaction. (3)** Staff
Provides a comprehensive picture of man and the problems of human existence and personal adjustment with emphasis upon the self and one's interaction with others.
Prerequisite: permission of instructor. {Fall, Spring}

**476. Medical Aspects in Counseling. (3)**
An introduction to medical information for the counselor who has a need to understand and interpret information about clients who have a disability or who are on medication. The counselor must be conversant with medicine because he/she may be professionally involved with people who have experienced severe and disabling illness. {Fall}

***492. Workshop in Counseling. (1-4)** Staff
Carries graduate credit when specifically approved by the Office of Graduate Studies. {Offered upon demand}

***493. Topics. (1-3)** Staff

***510. Techniques of Parent-Teacher Counseling. (3)** Micali
(Also offered as Spec Ed 508.) Two systems employed in intervention counseling by counselors and special educators and their practical application in a variety of institutional settings.
Prerequisite: 420 or permission of instructor.

***511. Rehabilitation Resources and Placement Laboratory. (1-3)**
Corequisite: 410. {Fall}

***512. Differential Diagnosis I. (3)** Heisey, Micali
Prerequisite: permission of instructor.

***513. Socio-Economic Information in Counseling. (3)** Long

***514. Organization and Supervision of Counseling Services. (3)** Rinaldi

***515. Using Tests in Counseling.** [Differential Diagnosis II.]**(3)** Anderson, Micali

***516. Clinical Case Study. (3)** Anderson, Micali
{Fall, Spring}

***517.** [518]**Theories of Counseling. (3)** Fishburn, Maes, Morgan
Prerequisite: 520, 530. {Summer, Fall, Spring}

**518.** [*517.]**Group Counseling. (3)** Fishburn, Heisey, Rinaldi, Morgan
Prerequisite or corequisite: 517.

***519. Practicum in Counseling. (1-6)** Staff
Prerequisite: 520, 530, 517, 518, permission of instructor.

***520. Foundation of Counseling. (3)** Staff

***530. Dynamics of Human Behavior. (3)** Maes, Zick

***531. Theories of Human Interaction. (3)** Staff
{Fall, Spring}

***540. Counseling in the Elementary School. (3)** Dahmen, Long, Heisey

***541. Counseling and Play Therapy with Children. (3)** Heisey

***550. College Personnel Work. (3)**

***560. Family Counseling. (3)** Zick
Prerequisites: 420, 430, 517 and a course in the study of the family.

***575. Values Clarification. (3)** Heisey
Prerequisite: permission of instructor.

***576. Medical Aspects in Counseling. (3)** Barricklow
{Fall}

***580. Psychosocial Aspects of Disability. (3)** Fishburn
{Spring}

***591. Problems. (1-3, maximum of 6)** Staff
Prerequisite: permission of instructor.

***592. Workshop in Counseling. (1-4)** Staff
For degree restrictions, consult the Graduate Programs Bulletin.

***593. Topics. (1-3)** Staff

***596. Internship in Rehabilitation. (6-12)** Barricklow
Prerequisites: 420, 430, 517, 518, 519.

***599. Master's Thesis. (1-6 hrs. per semester)** Staff
See the Graduate Program Bulletin for total credit requirements.

***620. Seminar in Counseling. (3)** Staff

***621. Advanced Theories of Counseling and Psychotherapy. (3)** Fishburn, Maes

***622. Advanced Group Counseling and Psychotherapy. (3)** Fishburn, Maes

***630. Advanced Practicum in Counseling, Counselor Education and Supervision. (3-6)** Maes, Micali

***696. Internship. (3-6, maximum of 12)** Maes, Micali

***699. Dissertation. (3-12 hrs. per semester)** Staff
See the Graduate Program Bulletin for total credit requirement.

# EDUCATION, HEALTH, PHYSICAL EDUCATION, AND RECREATION

Leon E. Griffin, Chairperson
Johnson Gym 168, 277-3104

**PROFESSORS:**

Leon E. Griffin, Ed.D., University of Utah
Frances McGill, Ph.D., Ohio State University
Frank E. Papcsy, Ph.D., New York University (Director, Graduate Studies)
Elmer A. Scholer, Ph.D., University of Illinois
Armond H. Seidler, Ph.D., University of Illinois

**ASSOCIATE PROFESSORS:**

Hemming Atterbom, Ph.D., University of Oregon, (Director, Human Performance Laboratory)
Paul B. Dearth, Ph.D., University of California (Los Angeles)
Lorain F. Diehm, M.S., Kansas State Teachers College
John A. Gustafson, Ph.D., University of Utah
Vivian Heyward, Ph.D., University of Illinois
Ernest Lange, Ed.D., University of New Mexico, (Director, Therapeutic Programs)
Nicolaas J. Moolenijer, Ph.D., University of Southern California
Robert G. Ness, Ph.D., Stanford University
Charlotte L. Piper, M.A.,University of New Mexico

**ASSISTANT PROFESSORS:**

Mary J. Campbell, Ph.D., Ohio State University (Program Coordinator Professional Physical Education)
Altha Crouch, Ph.D., University of New Mexico
William De Groot, Ed.D., Arizona State University, (Program Coordinator, Physical Education Basic Instruction Program)
Gordon James, Ph.D., University of Utah, (Program Coordinator, Health Education)
Linda S. King, Ph.D., Texas Women's University
Russell D. Mitchell, M.S., Southern Illinois University
Steve Rubio, Ph.D., University of Utah

**LECTURERS:**

Brenda L. Juric, M.S., University of New Mexico
L. Mickee Mickelsen, M.S., University of Utah

**ADJUNCT ASSISTANT PROFESSORS:**

Edward G. Case, B.S., University of New Mexico
Robert L. DeFelice, M.P.H., University of Michigan
Catherine Salveson, M.S., University of New Mexico

The Department offers a number of programs. The service program in physical education *(see Basic Instruction Program)* is open to all students in the University and is required by some of the degree-granting colleges (for specific requirements, refer to group requirements of each individual college.) The instructor in each course should be consulted concerning proper clothing or uniform.

The Department offers curricula leading to undergraduate and graduate degrees in the preparation of community health educators and teachers of health education and physical education. A non-teaching option in Physical Education Exercise Technologist is also offered. In addition, it offers undergraduate and graduate degree programs in recreation designed to train recreation leaders and administrators. A park and recreation field service is operated by the Department. The Center for Leisure and Recreation, a program of the Institute for Social Research and Development, works closely with this Department.

**CURRICULA** See pp. 41-42.

## HEALTH EDUCATION

**164. First Aid. (3)**
Preparation in knowledge and skills to meet the needs in most situations where first aid care is needed. Students eligible for Advanced First Aid Certificate and CPR Certificate. {Summer, Fall, Spring}

**171. Personal and Community Health. (3)**
Exploration of the major areas of health information pertinent to understanding how to achieve, maintain, and promote positive health. Topics covered include mental health, drugs, human sexuality, prevention and control of diseases, nutrition, consumer health, and ecology. {Summer, Fall, Spring}

**212. Fundamentals of Human Sexuality. (3)**
Basic knowledge about human sexuality including anatomical, physiological, psycho-social, and ethical components. Broad consideration of sexual behavior. Emphasis on discussion of viable topics from varying points of view. {Fall, Spring}

**247. Consumer Health. (3)**
Preparation in knowledge and skills related to consumers of health products and services.
Prerequisite: 171. {Spring}

**260. Introduction to Health Education. (3)**
For those considering becoming health majors or minors in school health or community health. Exploration of the basic philosophy and fundamental practices currently utilized in health education.
Prerequisite: 171. {Fall, Spring}

**292. Workshop. (1-4)**
{Summer, Fall, Spring}

**293. Topics. (1-3)**

**381. General Safety Education. (3)**
Basic principles of safety education. Current safety programs as they apply to school, home, community, and occupational settings. {Spring}

**333. An Experiential Approach to Developing Mental-Emotional Health in the Classroom. (3)**
An affective, experiential approach to understanding the ramifications of the mental-emotional health component in teaching. Development of personal and professional qualities to maximize positive teacher-student relationships.
Prerequisites: 171, 260, Ed Fdn 290, 303, 310 or permission of instructor. {Fall, Spring}

**345. Professional Experience in School and Community Health Education. (1-4)**
Prerequisite: health education majors only. {Fall}

**391. Problems. (1-3)**
Prerequisite: permission of health education faculty member. {Summer, Fall, Spring}

**400. Student Teaching in Elementary Schools, (3-6-9)**
{Fall, Spring}

**402. Traffic Safety Education in Secondary Schools. (3)**
Those enrolling must be licensed drivers. Discussion includes improvement of traffic conditions; the school's part in the safety program, the need for high school courses; methods and equipment for skill tests; insurance costs, records for behind-the-wheel training; classroom teaching methods; and physical tests for drivers.
Prerequisites: basic first aid course and permission of instructor. {Offered upon demand}

**442. Emergency Health Care. (3)**
Information and skills in recognizing and managing emergencies due to illness or injuries. Prepares students to be eligible for First Aid Instructor Certification and CPR Instructors. Limited to juniors/seniors.
Prerequisite: 164 or permission of the instructor. {Summer, Fall, Spring}

**451. Curriculum in Health Education (3)**
A course designed to provide knowledge of curriculum in Health Education for school and Community Health Educators.

**461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
{Fall, Spring}

**462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
{Fall, Spring}

**#469. Elementary School Health and Health Education. (3)**
Stress is placed on understanding current information related to health of elementary school children, planning and directing learning experiences in health and safety, promoting a health environment for learning, and ways of working as an effective member of the school health team. Open to health specialists, elementary school administrators, and classroom teachers.
Prerequisites: 171, Ed Fdn 303, or permission of instructor. {Fall}

**#470. Secondary School Health and Health Education. (3)**
Development of needed competencies for teaching health education at the secondary level. Emphasis on planning, methodology, and classroom techniques, observations, practice, and critical study of problem areas related to classroom instruction.
Prerequisite: 171, 260, 333, Ed Fdn 290, 303, 310, Lib/Media 432 or permission of instructor. {Fall, Spring}

# Limited to junior and seniors only.

***471. Introduction to Community Health. (3)**
New developments in research in major health problems, the ecology of local, national, and world health problems. A basic foundation in the history of public health, principles in environmental health and control of disease in communities. {Fall, Spring}

***475. Alternative Approaches in Drug Education. (3)**
Teaching skills necessary to communicate effectively in this subject material. Emphasis on methodology, curriculum, and teacher qualities.
Prerequisite: permission of instructor. {Spring}

***482. Multicultural Health Beliefs in New Mexico. (3)**
An overview of the health beliefs of people in New Mexico with a proportional emphasis towards the Hispanic population and Native Americans. The implications of these beliefs will be addressed by various learning experiences.
Prerequisites: Permission of instructor upper division or graduate status. {Fall}

***486. Investigations in the School Health. (3)**
Analysis of current developments and problems in school health at national, state, and local levels. Special attention is directed to the individual and joint responsibilities of various school health personnel.
Prerequisite: 469 or 470 or permission of instructor. {Offered upon demand}

***492. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Office of Graduate Studies. For degree restrictions see p. 37 of this catalog or consult the Graduate Program Bulletin.
{Offered upon demand}

***493. Topics. (1-3)**

***495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisites: permission of field experience supervisor, 345. Limited to health education majors. {Summer, Fall, Spring}

**497. Readings and Research in Honors. (3-6)**
Prerequisite: see College of Education departmental honors section.

***501. Contemporary Health Issues. (3)**

***507.** [503.]**Research Design in Health Education, Physical Education, and Recreation.** [Philosophies of Inquiry in Health Education, Physical Education, and Recreation.]**(3)**
(Also offered as PE, Rec, and Ed Fdn 507.)
Prerequisite: senior standing.

***504. Research Seminar. (1)**

***506. Health Behavior. (3)**
{Spring}

***511. Administrative Aspects of School and Community Health. (3)**
{Fall}

***516. Seminar in Health Education. (3)**
{Offered upon demand}

***520. Teaching Human Sexuality. (3)**
Prerequisite: 212 or permission of instructor. {Spring}

***560. Perspectives in Health Education. (3)**
Prerequisites: graduate status and H. Ed 171.

***572. Community Health Education Program Planning, Development, and Evaluation. (3)**
Prerequisite: graduate status in Health Education.

***574. Epidemiological Principles for Health Educators. (3)**

***591. Problems. (1-3, maximum of 6)**
Permission of health education faculty member. {Summer, Fall, Spring}

***592. Workshop. (1-4)**
{Offered upon demand}

***593. Topics. (1-3)**

***595. Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisites: acceptance in health education graduate program and permission of field work supervisor. {Summer, Fall, Spring}

***598. Directed Readings in Health Education. (3-6, maximum of 6)**

***599. Master's Thesis. (1-6 hrs per semester)**
{Summer, Fall, Spring}

***604. Research Seminar. (1)**
(Also offered as PE and Recrea 604.)
Prerequisite: Departmental required research skills sequence.

***696. Internship. (3-6, maximum of 12)**

***698. Directed Readings in Health Education. (3-6, maximum of 12)**

***699, Dissertation. (3-12 hrs. per semester)**
{Summer, Fall, Spring}

# PHYSICAL EDUCATION

## BASIC INSTRUCTION PROGRAM—PHYSICAL EDUCATION

Most activity courses are offered every semester.

**101. Beginning Swimming. (1)**
Instruction for students who have not been in the water or have a fear of water.

**102. Intermediate Swimming. (1)**
Instruction in all basic strokes. For students who can swim.

**103. Advanced Swimming. (1)**
Instruction and practice in perfecting all swimming strokes; competitive skills; synchronized skills.

**104. Diving. (1)**
Instruction in basic fundamentals of springboard diving, primarily on one-meter board.

**105. Water Polo. (1)**
Basic skills, strategy, rules, and terminology to play and officiate the game.

**106. Lifesaving. (1)**
Instruction and practice in lifesaving techniques which lead to advanced Red Cross Lifesaving Certificate.
Prerequisite: ability to swim, basic strokes.

**107. Water Safety Instruction. (2)**
Intruction in swimming, teaching techniques for those who want to become teachers of swimming.
Prerequisite: current Red Cross Senior Lifesaving Certificate.

**108. Small Water Craft Operation. (2)**
Instruction and practice in canoeing, sailboating, kayaking, and in operation of small motor craft.

**109. Skin and Scuba Diving. (2)**
Special fees. Fundamental skills of skin and scuba diving, use of equipment, medical and safety aspects, dive planning, oceanography, and marine life.

**110. Advanced Scuba. (2)**
Special fees. Instruction in technical aspects of diving such as repetitive, deep decompression and high altitude diving, equipment maintenance and repair, underwater navigation, search and recovery, light salvage diving, life saving, and first aid.

**115. Women's Gymnastics. (1)**
A course to acquaint the student with fundamental skills of tumbling, balance beam, trampoline, uneven parallel bars, and vaulting to better acquaint the student with gymnastics.

**117. Men's Apparatus Stunts. (1)**
Instruction in activities in tumbling, vaulting, parallel bars, and trampoline, to better acquaint the student with gymnastics.

**118. Individual Tumbling. (1)**
A class for the beginner to help develop coordination, agility, flexibility, a kinesthetic sense, and neuromuscular control.

**120. American Square Dance.** [American Country Dance.]**(1)**
Instruction in the basic movements of square, contra, and round dance.

**122. International Folk Dance. (1)**
Instruction of selected folk dances of the world.

**123. Intermediate International Folk Dance. (1)**
Instruction dependent upon experience of students in folk dances of the world.

**124. Ballroom Dance. (1)**
Instruction in the basic movements of the fox trot, waltz, lindy, rhumba, tango, and cha-cha.

**125. Intermediate Ballroom Dance. (1)**
Instruction dependent upon experience of students in basic movement of all segments of ballroom dance.

**126. Modern Dance I. (1)**
(Also offered as Dance 108, 109.) The Techniques and practice of basic motor skills and their application to aesthetic communication.

**128. Mexican-New Mexican Dance. (1)**
Instruction in the basic movement of the Mexican-New Mexican folk dance.

**135. Wrestling. (1)**
Instruction in the techniques and strategies of collegiate wrestling.

**136. Personal Defense. (1)**
Instruction in the basic skills needed to defend oneself against assault.

**138. Karate. (1)**
Instruction in the basic skills, blocks, strikes, and kicks of Japanese karate.

**140. Beginning Golf. (1)**
Instruction in the basic skills, equipment, rules, etiquette, and shot-making.

**141. Intermediate Golf. (1)**
Instruction emphasizes actual play.

**142. Advanced Golf. (1)**
For the low handicap player. Emphasis is on the refining of skills and strategies of competitive golf.

**143. Beginning Tennis. (1)**
Instruction in the basic skills and rules of tennis.

**144. Intermediate Tennis. (1)**
Instruction dependent upon experience and skills of students in basic fundamentals. Perfection of strokes.

**145. Advanced Tennis (1)**
Instruction for the consistent player with emphasis upon advanced skills.

**146. Bowling. (1)**
Special fees. Instruction and practice in the basic skills of bowling.

**148. Archery. (1)**
Instruction in the basic skills and knowledge of range archery.

**149. Badminton. (1)**
Instruction in the basic skills, rules, and strategy of competitive play.

**150. Fencing. (1)**
Instruction in the basic skills and knowledge of French foil fencing.

**151. Handball. (1)**
Instruction and practice in all the four-wall handball shots and rules.

**152. Racquetball. (1)**
Instruction and practice in the skills and rules of racquetball.

**153. Track and Field. (1)**
Instruction in the basic techniques of track and field events for both men and women.

**160. Weight Training. (1)**
Individual training programs for development of general strength, tone, endurance, and weight control.

**161. Developmental Physical Education—Weight Control. (1)**
Combined weight training and running for overall development.

**163. Aerobics. (1)**
Individualized running programs for improved cardiorespiratory endurance.

**164. Movement Fundamentals. (1)**
Individualized programs for improvement and development of posture and fitness.

**165. Yoga. (1)**
Introduction to five areas of yoga which are particularly significant to the Western World.

**167. Basketball** (Women).**(1)**
Instruction and practice of game skills with consideration given to the ability levels of students.

**168. Basketball** (Men). **(1)**
Instruction and practice of game skills with consideration given to the ability levels of students.

**169. Beginning Judo. (1)**
Ancient Japanese methods of bare-handed fighting. A special uniform is necessary.

**170. Volleyball. (1)**
Instruction and practice of basic game skills, with emphasis upon power techniques.

**172. Field Hockey. (1)**
Instruction and practice of basic skills and the rules of field hockey.

**173. Soccer-Speedaway. (1)**
Instruction and practice of basic skills of soccer and speedaway.

**174. Softball-Team Handball. (1)**
Practice in playing and learning the fundamentals of softball and team handball, a team game which can be described as being similar to a combination of basketball and hockey, sometimes called European handball.

**175. Flag Football. (1)**
Instruction and practice of basic game skills of flag football.

**176. Ice Skating. (1)**
Special fees. Basic and intermediate skating, including figure skating, basic broom hockey, ice skating, and precision skating.

**177. Beginning Skiing. (1)**
Special fees. Instruction leading to wide-track parallel skiing.

**178. Intermediate Skiing. (1)**
Special fee. Review of beginning skills including beginning parallel skiing and instruction in more advanced techniques.

**179. Cross Country Skiing. (1)**
Special fees. Instruction and practice in techniques leading to cross country touring.

**180. Camping Experiences. (2)**
Instruction and field experiences designed to develop skills in shelter, food, warmth, and safety.

**181. Horseback Riding. (1)**
Special Fees. Basic fundamentals of western horsemanship in relationship to trail and recreation riding. (First meeting at Johnson Gymnasium.)

**183. Wilderness Experience. (2)**
Special fees. Creation of stressful situation in the wilderness environment to help students learn more about themselves.

**185. Bicycling. (1)**
Instruction in bicyle maintenance, safety, speed trail riding, and touring; includes speed trails and tours of various distances.

**188. Therapeutic Physical Education. (1)**

**190. Casting and Angeling. (1)**
Instruction in skills and techniques for fishing in New Mexico.

**193. Topics. (1-2)**
New activities offered on an exploratory basis.

## PROFESSIONAL COURSES—PHYSICAL EDUCATION

Some of the following courses are scheduled to meet more periods or hours per week than indicated by the number of credit hours. These courses, in addition to lectures, include professional activity, laboratory, or field types of class experiences. To identify these courses, the number of class meetings or hours per week is stated after the course description.

**201. Theory and Practice of Gymnastics. (2)**
The professional course in gymnastics.
Prerequisite: 117. 4 class meetings per week. {Fall}

**202. Theory and Practice of Baseball. (2)**
The professional course in the coaching of baseball. 4 class meetings per week. {Fall}

**203. Theory and Practice of Wrestling. (2)**
The professional course in wrestling. 4 class meetings per week. {Spring}

**204. Theory and Practice of Track and Field. (2)**
The professional course in the coaching of track and field. 4 class meetings per week. {Spring}

**205. Fundamentals of Basketball. (2)**
The professional coaching course in the fundamentals of basketball. 4 class meetings per week. {Fall}

**206. Fundamentals of Football. (2)**
The professional coaching course in the fundamentals of football. 4 class meetings per week. {Spring}

**207. Theory and Practice of Swimming. (2)**
The professional course in swimming.
Prerequisite: ability to swim. 4 class meetings per week. {Fall, Spring}

**208. Body Mechanics and Self-Testing Activities. (1)**
3 class meetings per week. {Fall}

**209. Foundations of Human Performance. (3)**
Physiological, kinesiological, and psychological variables which affect human performance in exercise and sport skills. {Fall}

**210. Folk Dance (2)**
4 class meetings per week. {Fall, Spring}

**211. Competency in Sports and Dance I. (1-4)**
{Fall, Spring}

**212. Competency in Sports and Dance II. (1-4)**
{Fall, Spring}

**217. Physical Education in the Elementary School. (3)**
(Also offered as El Ed 319.) 4 hrs. per week. {Summer, Fall, Spring}

**218. Rhythms for the Elementary Schools. (2)**
Fundamentals of rhythm (and dance) for elementary school children. {Spring}

**219. Practicum in Elementary School Physical Education. (2)**
Designed to provide beginning teacher experiences in the elementary school level under the direct supervision and guidance of University personnel. {Spring}

**220. Movement Exploration for the Elementary School. (2)**
Rationale and development of movement education concepts and their application in teaching physical education on the elementary school level. {Fall}

**231. Basketball, Volleyball, Flag Football, Flickerball** [Basketball, Field Hockey, Flag Football, Flickerball.]**(1)** Staff
Instruction and practice of advanced game skills, tactics and strategy of basketball, volleyball, flag football, and flickerball.
Prerequisite: physical education major or minor. {Fall}.

**232. Golf and Dance. (1)** Staff
Comprehensive skill and knowledge in golf, folk dance, square dance, and ballroom dance.
Prerequisite: physical education major or minor. {Fall}

**233. Soccer, Speedaway, Racquetball. (1)**
Instruction and practice of advanced game skills tactics and strategy of soccer, speedaway, and racquetball.
Prerequisite: physical education major or minor. {Spring}

**234. Track and Field** [Volleyball, Track and Field.]**(1)**
Comprehensive skill and knowledge of track and field.
Prerequisite: physical education major or minor. {Spring}

**235. Tennis, Aerobics. (1)**
Comprehensive skill and knowledge of tennis. Knowledge of factors involved in designing an aerobics program and participation in a variety of aerobic programs.
Prerequisite: physical education major or minor. {Fall}

**236. Personal Defense, Archery. (1)**
Comprehensive skill and knowledge of personal defense and archery.
Prerequisite: physical education major or minor. {Fall}

**237. Softball, Team Handball, Badminton. (1)**
Instruction and practice of advanced game skills, tactics and strategy of softball, team handball, and badminton.
Prerequisite: physical education major or minor. {Spring}

**238. Wrestling or Modern Dance, Weight Training. (1)**
Comprehensive skill and knowledge of wrestling or modern dance and weight training. Student selects either wrestling or modern dance during first class meeting.
Prerequisite: physical education major or minor. {Spring}

**245. Professional Laboratory Experience in Physical Education. (2)‡**
For physical education majors only. May be repeated to a maximum of 8 semester hours. {Fall, Spring}

**260. Officiating in Sports. (2)‡**
Discussion and practice in officiating techniques in soccer, speedaway or field hockey, volleyball, basketball, etc.
Prerequisite: permission of instructor. 4 hours per week. Not restricted to education students. {Fall, Spring}

**273. Introduction to Athletic Training. (2)**
{Fall, Spring}

**277. Kinesiology. (3)**
Science of human motion.
Prerequisites: 289, Math 120, Biol 136, and 139. {Fall, Spring}

**284. Clinical Program for Corrective Therapy or Athletic Training (1-2-3-6-9-12)**
Clinical experience in corrective therapy or Athletic Training. {Summer, Fall, Spring}

**288. Motor Learning and Performance. (3)**
Psychological and nueurophysiological factors related to the development of motor skill, emphasis on the teacher's role in facilitating learning. {Fall, Spring}

**289. Tests and Measurments in Physical Education. (3)**
Techniques to determine abilities, needs, and placement in the physical education program.
Prerequisite: Math 120. {Fall, Spring}

**292. Workshop. (1-4)**
(Also offered as Rec and Hlth Ed 292.) {Summer, Fall, Spring}

**293. Topics. (1-3)**
{Summer, Fall, Spring}

**301. Teaching of Team Sports. (2)**
Prerequisite: 231, 232, 234, 237, or permission of instructor. 4 hours per week. {Fall}

**302. Teaching of Individual and Dual Sports. (2)**
Prerequisites: 233, 235, 236, 238, or permission of instructor. 4 hours per week. {Spring}

**303. Methods of Teaching Skiing. (3)**
Prerequisite: Skiing ability and experience and permission of instructor. {Fall}

**307. Team Sports in the Secondary School. (2)**
Prerequisite: 211 or permission of instructor. 4 hours per week. {Fall}

**308. Individual and Dual Sports in the Secondary School. (2)**
Prerequisite: 115 or 117 or permission of instructor. 4 hours per week. {Spring}

**309. Teaching of Gymnastics. (2)**
Prerequisite: 115 or 117 or permission of instructor. 4 hours per week. {Spring}

**310. Folk Dance in the School Program. (2)**
Prerequisite: 232 or permission of instructor. 4 hours per week. {Fall}

**326L. Fundamentals of Exercise Physiology. (3)**
Prerequisite: 289, Biol 136, 139. {Fall, Spring}

**366. Theory and Practice of Teaching Dance. (3)**
(Also offered as Dance 366.) Selection of methods and materials for teaching modern dance. Supervised practice teaching in local schools; elementary, junior, and high school levels. {Fall, Spring}

**373. Advanced Course in Athletic Training. (3)** Diehm
Expansion of the knowledges and techniques of training room procedures, principles and ethics of medical aspects of athletic training, organization and administration of athletic training programs, athletic therapy, emergency care.
Prerequisite: 273, 277, and H. Ed 164. {Spring}

**378. Principles of Physical Education. (3)**
The aims and objectives of physical education; physiological, psychological, and sociological principles which underlie practices in the profession.
Prerequsite: permission of instructor. {Fall, Spring}

**391. Problems. (1-3)**
Prerequisite: permission of Physical Education Coordinator. {Summer, Fall, Spring}

**400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)**
Prerequisites: Ed Fdn 290, 303, 310, PE 107, 217, 245, 277, 288, 289, 301, 302, 309, 310, 326L, 444, 445. {Fall, Spring}

**444. Teaching of Physical Education I. (4)**
(Also offered as SATE 444.)
Prerequisites: Ed Fdn 290, PE 106, 217, 245, 288, 289. {Fall}

**445. Teaching of Physical Education II. (4)**
Prerequisites: Ed Fdn 290, PE 106, 217, 245, 288, 289, 444. {Spring}

**452. Organization of Sports Programs. (3)**
Organization and administration of games and sports in intramural, interschool, and community recreation programs.
Prerequisite: permission of instructor. {Fall, Spring}

**461. Student Teaching in the Secondary Schools. (3-6-9, maximum total 15)**
Prerequisites: 107, 217, 245, 277 288, 289, 301, 302, 309, 310, 326L, 444, 445, Ed Fdn 290, 303, 310.

**462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
Prerequisites: 107, 217, 245, 277, 289, 326L, 301, 302, 309, 310, 444, 445, Ed Fdn 290, 303, 310. {Fall, Spring}

**464. Theory of Football. (3)**
To review and enlarge the student's knowledge of the basic techniques of football and to acquaint him with the principles, techniques, and strategy of coaching football at the junior high, high school, and college levels.
Prerequisite: 206 and senior standing. {Spring}

**465. Theory of Basketball. (3)**
To review and enlarge the student's knowledge of the basic techniques, and strategy of coaching basketball at the junior high, high school, and college levels.
Prerequisite: 205 and senior standing.

**466. Special Physical Education. (3)**
The field of adaptive and corrective physical education and its relationship to the regular curriculum in PE.
Prerequisite: 107. {Fall, Spring}

***467. Survey of Physical Defects and Pathology. (3)**
(Also offered as Spec Ed 467.) To investigate the etiology, characteristics, and treatment programs necessary for teaching the physically handicapped child.
Prerequisite: Spec Ed 201 or permission of instructor. {Fall}

***470. Designs for Fitness. (3)**
Focuses on physical fitness assessment and exercise prescription and includes (1) use of field tests and laboratory tests to appraise physical fitness levels, (2) designs of individualized physical fitness programs, and (3) evaluation of exercise programs.
Prerequisites: PE 277, 289, and 326 or equivalents. {Spring}

**479. Organization and Administration of Physical Education. (3)**
Program building, including criteria for the selection of activities and progression, and other factors affecting course of study such as facilities, equipment, budget, laws, policies, professional responsibilities.
{Fall, Spring}

***481. Administration of Varsity Athletics. (3)**
{Summer, Fall}

***482. History of Physical Education. (3)**
{Spring}

***484. Clinical Program for Corrective Therapy or Athletic Training. (1-3-6-9-12)**
Lecture and actual clinical experience in corrective therapy or athletic training.
Prerequisite: 273 for athletic training students. {Summer, Fall, Spring}

***486. Principles of Therapeutic Recreation and Physical Education. (3)**
Philosophy, principles, relationships, and contributions of therapeutic recreation as background for the recreation leader, physical educator, hospital administrator, and other personnel. {Spring}

***490. Supervision of Physical Education Programs. (3)**
Supervisory techniques stressing cooperative planning for the improvement of instruction and programs.
Prerequisite: permission of instructor. {Fall}

***492. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 37 of this catalog or consult the Graduate Programs Bulletin. {Summer}

***493. Topics. (1-3)**
{Summer, Fall, Spring}

**495. Practicum.** [Field Experiences.]**(3-6, maximum of 12)**
Planned and supervised professional laboratory of field experiences in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**497. Reading and Research in Honors. (3-6-9)**
Prerequisite: see p 36 {Summer, Fall, Spring}

***505. Foundations for a Philosophy of Physical Education. (3)**
Prerequisite: at least 3 hours in history, principles or methods of physical education. {Summer, Fall}

***506. Assessment Theory and Principles for Physical Education. (3)** Heyward
Prerequisites: PE 289 or equivalent; Ed Fdn 501 or equivalent {Spring}

***507.** [503.]**Research Design in Health, Physical Education, and Recreation.** [Philosophies of Inquiry in Health, Physical Education, and Recreation.]**(3)**
(Also offered as H Ed, Rec, and Ed Fdn 507.)
Prerequisite: graduate standing.

***510. Curriculum Construction in Physical Education. (3)**
{Summer, Spring}

***514. Kinesiotherapy. (3)**
{Summer, Spring}

***516. Seminar in Physical Education. (3)**
{Summer, Fall, Spring}

***521. Motor Learning of the Handicapped. (3)**
(Also offered as Spec Ed 521.)

***522. Motor Learning of the Handicapped. (3)**
(Also offered as Spec Ed 522.)

***523. Biomechanics. (3)**
{Summer, Fall}

***526. Motor Assessment of the Handicapped. (3)**
Prerequisite: Undergraduate major or minor in physical education, recreation, special education or permission of instructor. {Spring}

***528. Nueromuscular Basis of Human Performance. (3)**
Prerequisites: PE 326 or equivalent. {Spring}

***530. Laboratory Procedures in Exercise Physiology. (3)**
Prerequisites: undergraduate course in exercise physiology and permission of instructor. {Summer, Fall}

***540. Sports in American Culture. (3)**
Prerequisite: Soc 101 or equivalent. {Summer, Spring}

***569. International Foundation of Physical Education and Sport. (3)**
Prerequisite: PE 482 or permission of instructor. {Spring}

***570. The Analysis of Teaching Physical Education. (3)**
Prerequisite: permission of instructor. {Summer, Fall}

***575. Facilities Planning, Construction, and Utilization. (3)**
{Summer, Spring}

***588. Psychological Aspects of Sports. (3)**
Prerequisite: Psych 230 or 332 or equivalent. {Summer, Spring}

***591. Problems. (1-3, maximum of 6)**

***592. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Office of Graduate Studies. For degree restrictions consult the Graduate Programs Bulletin. {Summer}

***593. Topics. (1-3)**
{Summer, Fall, Spring}

***595. Advanced Field Experiences. (3-6)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***598. Directed Readings in Physical Education. (3-6, maximum of 6)**

***599 Master's Thesis. (1-6 hrs per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***604. Research Seminar. (1)**
Prerequisite: Departmental required research skills sequence.

***627. Seminar in Applied Physiology. (3)**
{Summer, Fall}

***691. Problems. (1-3, maximum of 6)**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***695. Advanced Field Experiences. (3-6, maximum of 12)**
(Also offered as Art Ed, Bus Ed, Ed Adm, Ed Fdn, Recrea, H Ec Ed, SATE 595.)
Prerequisite: permission of instructor.

***696. Intership. (3-6, maximum of 12)**
{Summer, Fall, Spring}

***698. Directed Readings in Physical Education. (3-6, maximum of 12)**

***699. Dissertation. (3-12 hrs per semester)**
See the Graduate Program Bulletin for total credit requirements.

## RECREATION

**175. Foundations of Recreation. (3)**
History of leisure and recreation; concepts of play and recreation; major recreation agencies. {Fall, Spring}

**221. Recreational Leadership. (3)**
Methods and materials in recreation leadership; theory, principles, and practice.
Prerequisites: 175, 290. {Summer, Fall, Spring}

**229. Workshop. (1-3)**
Topic will vary from semester to semester depending on student demand and faculty availability.

**245. Field Work in Recreation.** [Professional Laboratory Experience in Recreation.]**(3)**
Must be taken in conjunction with 221.
Prerequisite: majors/minors only. {Summer, Fall, Spring}

**275. Camp Leadership. (3)**
To introduce students to camp experiences and to study camping skills with emphasis on leadership functions. Field Trips. {Spring}

**285. Recreation Arts and Crafts. (3)**
(See Art Ed 285.)

**290. Creative and Social Arts for Recreation. (3)**
Experience in selection of materials and leadership techniques in group work in social and recreational activities for use in recreation programs. Field trips. {Summer, Fall, Spring}

**291. Music in Recreation. (2)**
(Also offered as Music 291.) Social foundations and practices of music in recreation. Emphasis on equipping the recreational leader with effective skills and materials to deal musically with both children and adults in recreational situations. {Fall}

**292. Workshop. (1-4)**
(Also offered as Hlth Ed, PE 292.) {Summer, Fall, Spring}

**293. Topics. (1-3)**
{Offered upon demand}

**301. Recreational Sports. (3)**
The professional course in recreational sports.
{Fall}

**302. Recreational Sports. (3)**
Expansion of 301 to include development of campus recreation. {Spring}

**311. Man and Leisure. (3)**
Background in leisure problems of today with emphasis on the individual's role and relationship to those problems. {Fall}

**378. Outdoor Recreation. (3)**
The development and organization of outdoor recreation in the United States. Includes economics, land planning, trends, and projections. Field trips. {Fall}

**385. Introduction to Recreation for Special Populations. (3)**
Survey analyses and techniques of recreation and leisure delivery services for special populations in a variety of settings. Field trips. {Fall}

**391. Problems. (1-3)**
Prerequisite: permission of the instructor. {Summer, Fall, Spring}

**400. Environmental Awareness in Outdoor Recreation Areas. (3)**
Prerequisite: 378. Field trips. {Summer}

***407. History and Philosophy of Parks and Recreation. (3)**
The historical development of recreation concepts and philosophies. {Fall}

***454. Development of Recreation Programs. (3)**
The course is concerned with all phases of planning and evaluating recreation programs: promotion, utilization of resources and facilities, and leadership.
Prerequisites: 221, 245 and for majors/minors only.

***477. Recreation in Special Settings. (3)**
Planning, organizing, and conducting recreation programs in industry, hospitals, commercial settings, private agencies, and other types of institutions.
Prerequisite: permission of instructor. Field trips. {Spring}

***479. Park Management. (3)**
The principles, practices, and problems involved in public park management, with emphasis upon facility design, maintenance, finance, and administration.
Prerequisite: permission of instructor. {Fall}

**480. Administration of Recreation Programs. (3)**
The organization, administration, and conduct of recreation programs in public and private agencies.
Prerequisite: 454. {Spring}

***485. Interpretative Services in Outdoor Recreation Areas. (3)**
Field trips. {Spring}

***486. Tourism and Recreation. (3)**
The role of tourism and its relationship to recreation in the United States with emphasis on the Southwest and New Mexico. {Spring}

***492. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Office of Graduate Studies. For degree restrictions see appropriate sections of this catalog, or consult the Graduate Programs Bulletin. {Offered upon demand}

***493. Topics. (1-3)**
{Offered upon demand}

**495. Field Experience. (3-6)**
Prerequisite: 245, majors/minors only. {Summer, Fall, Spring}

**497. Reading and Research in Honors. (3-6)**
Prerequisite: see honors requirements in this catalog. {Offered upon demand}

***504. Research Seminar. (1)**
(See PE 604.)

***507.** [503.]**Research Design in Health, Physical Education, and Recreation.** [Philosophies of Inquiry in Health, Physical Education, and Recreation.]**(3)**
(Also offered as Ed Fdn, H Ed, PE 507.)
Prerequisite: graduate standing.

***508. Organizational and Administration of Public Recreation. (3)**
{Fall}

***516. Seminar in Recreation. (3)**
{Spring}

***524. Evaluation of Park and Recreation Resources and Programs. (3)**

***540. Outdoor Recreation Planning. (3)**
{Spring}

***555. Contemporary Leisure Concepts. (3)**
{Fall}

***586. Principles of Therapeutic Recreation. (3)**
{Spring}

***591. Problems. (1-3, maximum of 6)**
Prerequisites: majors only and permission of the recreation coordinator.

***592. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Office of Graduate Studies. Consult the Graduate Programs Bulletin for restrictions.

***593. Topics. (1-3)**

***595. Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***598. Directed Readings in Recreation. (3-6, maximum of 6)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See Graduate Programs Bulletin for total credit requirements.

***604. Research Seminar. (1)**
(Also offered as Hlth Ed, PE 604.)

***696. Internship. (3-6, maximum of 12)**
{Summer, Fall, Spring}

***698. Directed Readings in Recreation. (3-6, maximum of 12)**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# EDUCATION, HOME ECONOMICS

Richard M. Smith, Chairperson
Education Office Building 110, 277-4316

**PROFESSOR:**

Ednell M. Snell, Ed.D., Teachers College, Columbia University

**ASSOCIATE PROFESSORS:**

Mary M. Smith, Ph.D., Colorado State University
Richard M. Smith, Ed.D., Oklahoma State University

**ASSISTANT PROFESSORS:**

J. Hill, Ph.D., Virginia Polytechnical Institute
Imogean H. McMurray, M.S., University of Tennessee
Pauline Turner, Ph.D., University of Texas

**INSTRUCTORS:**

P. Olson, M.S., Oregon State University
W. Sandoval, M.S., University of Nevada - Reno

**MAJOR STUDIES AND CURRICULUM**

See pp. 43

**HOME ECONOMICS**

101. Freshman Seminar. (2)
Individual's role as a home economist and his/her relationship with families. Required of all majors. {Fall}

**102. Infant Growth and Development. (3)**
Basic needs and growth factors of the child with emphasis on the prenatal period, infancy, and through the second year. {Fall, Spring}

**120L. Food Science. (3)**
Principles of selection and preparation of food including economic aspects. 2 lectures, 3 hrs. lab. {Fall, Spring}

**125. Introductory Nutrition. (3)**
Nutritive needs of normal individuals of all age groups; relation of nutrition to health. {Fall, Spring}

**150L. Clothing Construction. (2)**
Fitting and altering patterns and garments, methods of techniques in construction processes, use and upkeep of equipment. Two 2-hour labs. {Fall, Spring}

**218. Marriage and Personal Development. (3)**
Research in premarital and marital studies with direct application for interpersonal relationships will be reviewed. Opportunities to practice behaviors will be provided. {Fall, Spring}

**222L. Meal Management. (3)**
Principles of selection and prepartation of food. Meal planning and service.
Prerequisite: 120L or equivalent. 1 lecture, 4 hrs. lab {Fall}

**244. Consumer Decisions. (3)**
Understand the role of the consumer in the midst of the marketplace and the resouces available for purchase decisions. {Fall, Spring}

**250. Clothing and Human Behavior. (2)**
An interdisciplinary approach to study of clothing; origin of dress, factors of clothing in behavior, decision-making as a consumer.
Prerequisites: Psych 102, Soc 101, and Art Ed 130. {Spring}

**252. Textiles. (3)**
Construction, identification, use and care of clothing and household textiles. Consumer education related to textile products. {Fall, Spring}

**254L. Tailoring. (3)**
Methods of construction with specified fabrics in a lined jacket or coat and choice of knit fabric project, fitting. 1 lecture, 4 hrs. lab. {Fall}

**293. Topics. (1-3)‡**

**303. Practicum. (3)**
On-the-job training assignment topics for study are developed that lead to the understanding of the role and responsibilites of a clinical dietitian.
Prerequisite: junior standing. {Summer}

**318. Adolescent Development in the Family. (3)**
The course will focus on emotional, physical, personality development, and communication patterns of adolescents within the family setting. Also included is an examination of self-concept, dating, pre-marital sex, career and vocational decisions influenced by the family.

**325. Advanced Nutrition. (3)**
Nutrition related to the chemistry, physiology of the human body; interrelationships of nutrients, analysis of nutritive value of foods.
Prerequisites: 125, organic and inorganic chemistry. {Fall}

**326L. Nutrition Laboratory. (1)**
Calculating and visualizing amounts and proportions of nutrients in foods and analysis of recipes to determine nutritive value. Concurrent with 325. 2 hrs. lab. {Spring}

**341. House and Its Environment. (3)**
Guides in the selection of a house with emphasis upon the use of space for function, economy, and beauty. {Fall}

**391. Problems. (1-3)**

**403. Practicum—Hospital. (4)**
Student demonstrates and practices the role and responsibility of a clinical dietitian.
Prerequisites: senior standing concurrent with 426, 404. {Fall, Spring}

**404. Practicum-Community. (4)**
Student demonstrates and practices the role and responsibility of a clinical dietitian. Prerequisites: senior standing concurrent with 426, 403. {Fall, Spring}

**405. Evaluation Practicum, Community Nutrition. (4)**
Determination of student's competencies as a community nutritionist.
Prerequisites: senior standings, Community Dietetic Program, concurrent enrollment in 406. {Spring}

**406. Seminar, Community Nutrition. (3)**
Classic and recent literature on community nutrition integrated with student experience. Concurrent with 405L. {Spring}

***408L. Growth and Development of the Pre-School Child. (3)**
Developmental principles and recent research on social-emotional, cognitive, and physical development of the preschool child. Laboratory experiences.
Prerequisite: 102, Psych 102, junior standing. 2 lectures, 3 hrs. lab experience. {Fall, Spring}

**418. Family Relationships. (3)**
Survey of research in family studies. Practical applications for families will be considered. {Fall, Spring}

**425. Introduction to Clinical Nutrition. (3)**
(Also offered as Clin Sci 425.) Determination of nutritional status of normal persons by the health team, using research methodology.
Prerequisites: physiology, 325, 326L, biochemistry or concurrently enrolled in 500 Med Biol I. {Fall, Spring}

**426. Clinical Nutrition. (4)**
Practice, under supervision, the role of a nutrition educator in a health organization; the facilitator of continuing nutritional care through the life cycle; and the responsibilities of professional status.
Prerequisites: senior standing, concurrent enrollment in 403, 404. {Fall, Spring}

**427L. Large Quantity Food Production. (3)**
Standard methods of food production in quantity; food cost control; standardization of formulas, menu planning, and food service.
Prerequisites: 120L, 222L. {Spring}

**428. Diet Therapy. (3)**
The adaptation of diets in the treatment of impaired digestive and metabolic conditions.
Prerequisites: Chem 111L, 212, H Ec 125, 325.

***431L. Experimental Foods. (3)**
Experimental methods applied to food preparation, food marketing and food laws.
Prerequisite: Chem 111L. 2 lectures, 3 hrs. lab.

**434. Organization and Management. (3)**
A study of the principles of organization and management applied to food service installations.
Prerequisite: Psych 102; pre- or corequisite: Mgt 361.

**443. Family Decision Making. (3)**
Family decisions in the allocation and use of resources to meet family goals.
Prerequisites: Soc and Anthro; junior standing. {Fall}

***444. Family Finance. (3)**
Economic problems of direct concern to the family.
Prerequisites: 443, a basic course in economics, psychology, and sociology. {Spring}

**445L. Home Management Lab. (4)**
Experiences in dealing with families with varying value structures and for identifying values and goals held by others.
Prerequisite: 443. {Fall, Spring}

***456L. Dress Design. (3)**
Dress designing by flat pattern, fitting, and altering.
Prerequisites: advanced standing. 1 lecture, 4 hrs. lab. {Spring}

***468. Aging and the Family. (3)**
The impact of environmental factors upon the aging family will be explored.
Prerequisite: 418 or permission of instructor. {Spring}

***493. Topics. (1-3)**

***509L. Organization and Management of Nursery Schools and Kindergarten. (3)**

***510. Young Child at Home and School. (3)**

***515. Parent Education. (3)**
Prerequisites: Graduate standing with a minimum of 6 credit hours in child development, early childhood education, adolescence, family relationships, and/or developmental psychology.

***518. Working with Parents and Children. (3)**
Prerequisite: B.A. in H Ec, Educ, Psych, or related discipline.

***520. Family Living in Modern Society. (3)**

***535. Seminar in Nutrition. (3)**

***549. Managing Family Resources. (3)**

***554. Socio-Psychological Aspects of Clothing. (3)**

***555. Seminar in Textiles. (3)**

***591. Problems. (1-3 hrs. each semester)**

***592. Workshop. (1-4)**
For restriction, consult the Graduate Programs Bulletin.

***593. Topics. (1-3)**

***598. Directed Readings in Home Economics. (3-6, maximum of 6)**

***696. Internship. (3-6, maximum of 12)**

## HOME ECONOMICS EDUCATION

**361. Pre-Student Teaching Experience in Secondary Education. (3)**
2 hour seminar, 3 hrs. field work weekly. Concurrent with 436. {Spring}

**391. Problems. (1-3)**

***437. Teaching of Home Economics. (3)**
{Spring}

**461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
Prerequisite: 437; concurrent: 445, 465. Fall, Spring

**462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
{Fall, Spring}

**463. Student Teaching in the Secondary Schools: Professional Education block. (6-15)**
{Fall, Spring}

**465. Seminar: Vocational Home Economics Education. [Home Economics Seminar.] (3)**
Trends in vocational home economics education. {Fall, Spring}

***475. Evaluation in Home Economics. (3)**
Newer concepts concerning evaluation and testing instruments and techniques for home economics. The construction and use of evaluative devices for home economics in the classroom and ways of determining their value.
Pre- or corequisite: 461. {Offered upon demand}

***480. Curriculum Development for Home Economics. (3)**
Curriculum, methods, and facilities for courses which use home economics knowledge and skills.
Prerequisites: major in home economics and teaching experience. {Offered upon demand}

***492. Workshop. (1-4)**
For degree restriction see p. 37 of this catalog and the Graduate Programs Bulletin. Carries graduate credit when specifically approved by the Office of Graduate Studies. {Offered upon demand}

***493. Topics. (1-3)**

**495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**497. Reading and Research in Honors. (3-6)**
Prerequisite: see P. 37. {Offered upon demand}

***570. Seminar in Home Economics Education. (3)**

***591. Problems. (1-3, maximum of 6)**

***592. Workshop. (1-4)**

***593. Topics (1-3)**

***595. Advanced Field Experiences. (3, maximum total allowed 6)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***598. Directed Readings in Home Economics Education. (3-6, maximum of 6)**

## EDUCATIONAL, INDUSTRIAL
See Education, Secondary.

## EDUCATION, LIBRARY/MEDIA
See Education, Educational Foundations, Educational Library/Media.

## EDUCATION, MUSIC
See Music Education.

## EDUCATION, PHYSICAL
See Education, Health, Phsysical Education, and Recreation.

## EDUCATION, SECONDARY AND ADULT TEACHER

Paul W. Tweeten, Chairperson
Mesa Vista 3036, 277-4115

**GENERAL SECONDARY**

**PROFESSORS:**

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Peter Prouse, Ph.D., Northwestern University
George C. Stoumbis, Ed.D., University of Oregon
Paul W. Tweeten, Ph.D., University of Iowa
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**ASSOCIATE PROFESSORS:**

George Hirshfield, Ed.D., University of New Mexico
Sigmund A. Mierzwa, Ph.D., Stanford University

**ASSISTANT PROFESSORS:**

Breda Bova, Ph.D., University of New Mexico
Mary Jane Kneen, Ph.D., University of Toledo
Lynette Oshima, Ph.D., University of Indiana

**PROFESSOR EMERITUS:**

William B. Runge, Ed.D., University of Southern California

**VOCATIONAL EDUCATION**

Roderic L. Wagoner, Ed.D., University of Arizona. (Program Head)
Charles O. Taylor, Ed.D., Temple University

**ADULT EDUCATION**

**ASSOCIATE PROFESSOR:**

Stephen G. Bowes, Ph.D., Northern Illinois University, (Program Head)

**BUSINESS EDUCATION**

**PROFESSOR:**

Edwin J. Weber, Ph.D., University of Michigan. (Program Head)

**ASSOCIATE PROFESSOR:**

Elizabeth I. Walls, Ed.D., University of Kentucky

**ASSISTANT PROFESSORS:**

Childress McQueen, Ed.D., Arizona State University
Karla A. Watanabe, Ed.D., University of Tennessee

**INDUSTRIAL EDUCATION**

Gerald E. Cunico, Ed.D., Utah State University (Program Head)

**PROFESSOR:**

Robert D. Nesbitt, M.Ed., Texas A&M University

**ASSOCIATE PROFESSOR:**

Frank R. Field, Ed.D., Ball State University

**ASSISTANT PROFESSOR:**

Charles O. Taylor, Ed.D., Temple University

**In this Department, programs are offered for the preparation of teachers of secondary school students and adults in academic areas, business education, and industrial education. Also offered are programs and courses in curriculum and instruction for teachers and curriculum specialists.**

**CURRICULUM AND INSTRUCTION**

**293. Topics. (1-3)**

**296. Internship. (3-6, maximum of 12)**

**§361. Pre-Student Teaching Experience I. (3)**
3 hrs. seminar, 6 hrs. field work weekly. {Fall, Spring}

**362. Pre-Student Teaching Experience II. (3)**
{Fall, Spring}

**371. Vocational Instructional Planning. (3)** Staff
Includes an introduction to vocational technical education in area schools, learning theory, instructional planning with performance objectives, units and lessons, and selection of materials and methods. {Fall, Spring}

**372. Vocational Instructional Implementation. (3)** Staff
Includes use of individualized modules in learning, motivation, total vocational technical curriculum, methods and strategies in teaching adults. {Fall, Spring}

**391. Problems. (1-3)**
{Offered upon demand}

**420. Curriculum Development in Health Occupation Education. (3)**
Introduction to the principles of curriculum development in health occupations education.

**421. Teaching Health Occupations. (3)**
Methods of developing instructional units and reading methods for health occupations teachers.

**422. Organization and Administration of Health Occupations Education Programs. (3)**
Methods and techniques of organizing health occupations programs.

***423. Instructional Evaluation in Health Occupations Education. (3)**
Principles of evaluation of instruction applied to health occupations education.

**429. Teaching of Mathematics. (3)** Mierzwa, Mitchell
Prerequisites: 361 and 362. {Fall}

**430. Teaching of Communication Arts. (3)** Hirshfield, White
Prerequisites: 361, 362, and Ling 292 or Engl 440. {Spring}

**431. Teaching of Sciences. (3)** Tweeten
Prerequisite for 461-Science. Prerequisite: to be taken concurrently with 362. {Fall, Spring}

**432. Teaching of Social Studies. (3)** Oshima
Prerequisite: consult instructor for prerequisites. {Fall, Spring}

**433. Teaching of Industrial Subjects. (3)** Nesbitt
(See I Ed 433.)

**434. Teaching Art in Secondary School. (3)**
(See Art Ed 460.)

***435L. Remedial Reading Problems. (3)** Altwerger, Maggart, VanDongen
(Also offered as El Ed 435L.) Includes 3 hrs. supervised lab. each week.
Prerequisite: El Ed 431 or permission of instructor. 3 lectures, 1 hr. lab. {Summer, Fall, Spring}

**436. Teaching of English. (3)** Logan, Hirshfield, White
Prerequisites: 361, 362, and Ling 292 or Engl 440. Carries credit both in education and in English. {Fall}

***437. Teaching of Home Economics.(3)** Snell
(See H Ec Ed 437.)

***438. Teaching Reading in the Content Field. (3)** VanDongen, Kneen, Oshima, White
(Also offered as El Ed 538.)
Prerequisite: classroom teaching experience or permission of the department. {Offered upon demand}

**439. Teaching of Business Subjects. (3)**
(See Bus Ed 439.)

***440. Teaching of French. (3)** T. Book
(Also offered as French 440.)
Prerequisite: SATE 361. {Spring}

***441. Teaching of Spanish. (3)**
(Also offered as Spanish 441.) Applies linguistics basis acquired in Spanish 440 to problems of teaching. Required for teaching certificate. Does not count for Spanish major or minor. Students are advised to take 441 prior to student teaching.
Prerequisite: 361. {Fall, Spring}

***442. Teaching of Reading. (3)** White
Prerequisites: 361 and Ling 292 or Engl 440. {Fall}

***443. Coordination Techniques in Vocational Cooperative Programs.(3)** Runge
(Also offered as Bus Ed, I Ed 443.) Development of present practices in work experience programs for secondary school students. Special emphasis is given to organization and administration of vocational education cooperative part-time work plans for distributive office and industrial occupations. {Summer only}

**444. Teaching of Physical Education. (3)**
(Also offered as PE 444.) {Fall}

***445. Teaching of German. (3)** Jesperson
(Also offered as German 445.)
Prerequisites: SATE 361 and 362. {Offered upon demand}

***448. Career Education. (3)** Wagoner, Runge
(Also offered as El Ed 448.) New career education concepts, objectives, models, occupational clusters, USOE, state and local curriculum materials and implementation guidelines. Class activities include use of resource persons, field trips, and contacts with the business community. {Offered upon demand}

***449. Teaching the Native Language to the Native Speaker. (3)**
A comprehensive examination of characteristics, behavior, and language of the native-speaking student, with specific implications for teaching the native language to the native-speaking in secondary schools.
Prerequisites: proficiency in the native language (Spanish, Navajo, etc.), 361, 362, 441, and permission of instructor. {Fall and upon demand}

***450. Teaching in Bilingual Programs in Secondary Schools. (3)**
Bilingual education philosophy and programs will be examined with specific implications for applying theory to practice in teaching in interdisciplinary bilingual programs in secondary schools.
Prerequisites: 361, 362, and permission of instructor. {Spring and upon demand}

***456. Science, Technology, and Human Values: Implications for Education. (3)**
(Also offered as Ed Fdn, I Ed 456.) Examinations of the continuing social impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.

**461. Student Teaching. (3-6-9, maximum total allowed 15)**
Observation and teaching in secondary schools for one or more semesters. Weekly seminar meetings required with University supervisors.
Prerequisites listed on p. 37. {Summer, Fall, Spring}

**462. Student Teaching. (3-6-9, maximum total allowed 15)**
A second student teaching experience.

**463. Professional Education Block. (6-15)**
Combines foundations, methods, pre- and student teaching in one semester. Students should apply for admission at least one semester in advance to the program director. See instructors for special prerequisites and scheduling.

***472. Exploring Albuquerque's Environment. (3)**
(Also offered as Arch 472.) Lectures and student research on issues in the cultural, natural and built environment in Albuquerque.

***480. Second Language Pedagogy. (3)**
(Also offered as Mod Lang and Ling 480.)

***481. Education Across Cultures in the Southwest. (3)** Pfeiffer
(Also offered as El Ed 481.) {Summer, Fall, Spring}

***482. Teaching English as a Second Language. (3)** Brodkey, Pfeiffer, White
(Also offered as El Ed 482.)
Prerequisites: Ling 292 or Engl 440 (may be taken concurrently) and permission of instructor. {Spring}

***485. Measurement and Evaluation Techniques. (3)**
(Also offered as I. Ed, Bus Ed 485.)

***492. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 37 of this catalog or consult the Graduate Programs Bulletin. {Offered upon demand}

***493. Topics. (1-3)**

**495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**497. Reading and Research in Honors. (3-6)**
Prerequisites: see p. 36. {Offered upon demand}

***500. Advanced Instructional Strategies. (3)**
{Summer, Fall, Spring}

***501. High School Curriculum. (3)**

***502. The Junior High School. (3)**

***503. Student Activities in the Secondary School. (3)**

***504. The Two-Year College Curriculum. (3)**

***505. Development, Selection, Use, and Organization of Instructional Materials. (3)**
(Also offered as I. Ed, Bus Ed. 505.)

***506. The Middle School. (3)**
(Also offered as El Ed 506.) {Fall or Spring, Summer upon demand}

§ Students in SATE 361 must enroll concurrently in the appropriate section of Ed Fdn 303 and 310.

***507. Developing Curriculum for Middle Schools. (3)**
(Also offered as El Ed 507.) {Fall or Spring, Summer upon demand}

***508. Instructional Strategies for Middle Schools. (3)**
(Also offered as El Ed 508.)

***509. Seminar in Supervision of Field Experiences. (1-3)**

***510. Developments in Industrial and Vocational Education. (3)**
(Also offered as Bus Ed, I Ed 510.)

***511. Curriculum Appraisal and Improvement of School Programs. (3)** Stoughton, Stoumbis, Wagoner
(Also offered as El Ed 601.)

***515. Remedial Teaching Techniques. (3)**
(Also offered as El Ed 515.) {Summer, Spring 1982 and alternate years}

***520. Instructional Trends in the Communication Arts. (3)**

***521. Seminar in English Curriculum and Instruction. (3)**

***523. Administration of Industrial and Vocational Education. (3)**
(Also offered as I. Ed, Bus Ed 523.)

***527. Studies in Rhetoric for Teachers. (3)**
(Also offered as Engl 527.)

***528. Studies in Reading and Literature for Teachers. (3)**
(Also offered as Engl 528.)

***530. Seminar in Science Teaching. (3)** Tweeten

***532. The Reading Process. (3)** Altwerger, Van Dongen, White
(Also offered as El Ed 532.)
Prerequisites: 535L, El Ed 531, and permission of instructor. {Summer, Spring 1982 and alternate years}

***535L. Practicum in Learning Disabilities (Reading). (3)** Van Dongen, Maggart
(Also offered as El Ed 535L.) Includes 3 hrs. supervised lab. each week.
Prerequisites: 435L and El Ed 531 or SATE 520. {Summer, Fall, Spring}

***538. Teaching Reading through the Content Field. (3)** Van Dongen, White, Kneen, Oshima
(Also offered as El Ed 538.)
Prerequisite: classroom teaching experience or permission of the department. {Offered on demand}

***540. Instructional Trends in the Social Studies. (3)**

***542. Principles of Curriculum Development. (3)**
(Also offered as El Ed 542.) {Spring 1981, Summer, and alternate years}

***546. Economic Education. (2 or 4)**
(Also offered as Econ and Bus Ed 546.)

**#549. History Education. (3)**
(Also offered as Hist 549.)

***550. Seminar in History Education. (3)**
(Also offered as Hist 550.)

***556. Proseminar in Problems of Language Instruction. (3)**
(See Spanish 543.)

***562. Practicum in the Supervision of Instruction. (3)** Auger, Tweeten
(Also offered as El Ed 562.) May be repeated for a maximum of 12 hrs. {Fall, Spring}

***581. Bilingual Education. (3)** Pfeiffer
(Also offered as El Ed 581.)
Prerequisite: permission of instructor. {Fall, Spring}

***582. Curriculum Development for Bilingual/Bicultural Programs. (3)**
(Also offered as El Ed 582.)
Prerequisite: permission of instructor. {Fall, Spring}

***590. Seminar. (3)** Tweeten, Wagoner
{Summer, Fall, Spring}

***591. Problems. (1-3, maximum of 6)**

***592. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Office of Graduate Studies. Consult the Graduate Programs Bulletin for restrictions.

***593. Topics. (1-3)**

***595. Advanced Field Experiences. (3-6, maximum 12)**

***596. Internship. (3-6, maximum of 12)**

***598. Directed Readings in Secondary and Adult Teacher Education. (3-6, maximum of 6)**

***599. Master's Thesis. (1-6 hrs. per semester)**

***611. Curriculum Appraisal and Improvement of School Programs. (3)**
(Also offered as El Ed 601.)

***643. Curriculum Theory Seminar. (3)**
(Also offered as El Ed 643.)

***690. Dissertation Seminar (3)**
{Fall, Spring}

***696. Internship. (3-6, maximum of 12)**

***698. Directed Readings in Secondary and Adult Teacher Education. (3-6, maximum of 12)**

***699. Dissertation. (3-12 hrs per semester)**

# BUSINESS EDUCATION PROGRAMS

## SECRETARIAL

NOTE: Students should consult with business education advisers for proper placement and credit before enrolling in skill courses BE 111, 112, 113, 114; Mgt 101, 102.

**¶111. Beginning Typewriting. (2)**
Use of the touch system in learning basic typewriting skills and applications. 1 lecture, 2 hrs. lab. {Offered upon demand}

**¶112. Intermediate Typewriting. (3)**
Development of speed and accuracy in business letters, forms, manuscripts, and tabulations.
Prerequisite: knowledge of typewriter keyboard and operation. 2 lectures, 2 hrs. lab. {Fall, Spring}

**113. Shorthand Theory. (3)**

113A Gregg: theory and essentials of writing shorthand; speed goal: 60 wpm minimum. 3 lectures, 2 hrs. lab. {Fall, Spring}

113B Forkner: theory and essentials of writing shorthand.
Prerequisite: Bus Ed 111 or equivalent. {Fall}

**§114. Shorthand Dictation. (3)**
Review of Gregg theory; building dictation speed and development of transcription; speed goal: 80 wpm minimum. Writers of alphabetic systems should enroll in this course for their second semester.
Pre- or corequisite: 112; prerequisite: 113A or equivalent. {Fall, Spring}

**117. Office Machines and Filing. (2)**
Laboratory work in printing and visual display electronic calculators, 10-key adding machine, transcription from recorded dictation, filing. (Substitute BE 293 starting Fall 81, 3 hrs.)
Prerequisite: 112 or equivalent. 1 lecture, 2 hrs. lab. {Fall, Spring}

**201. Introduction to Data Processing for Business Education. (3)**
Introduction to basic data processing concepts, electronic data processing systems and designs, basic programming and coding techniques, and characteristics of selected computer languages. {Fall, Spring}

**°253. Shorthand Transcription. (3)**
Review of theory; dictation and transcription from shorthand notes correctly and speedily. Speed goal: 100 wpm minimum.
Prerequisites: 112, 114 (Gregg), or equivalent. 2 lectures, 2 hrs. lab. {Fall, Spring}

**257. Secretarial Administration. (3)**
Development of the ability to apply secretarial skills to office duties and to handle efficiently the responsibilities of a secretarial position.
Prerequisites: 112, 113, or equivalent. {Fall, Spring}

**¶262. Advanced Typewriting. (3)**
Proficiency in production of office problem material including letters, reports, manuscripts, tabulations, rough drafts, legal documents, and study of skill performance problems from point of view of teacher and/or office supervisor.
Prerequisite: 112 or equivalent. 2 hrs. lecture, 2 hrs. lab. {Fall, Spring}

**265. Business Communications. (3)**
Development of psychologically sound business communications, both oral and written, in correct and forceful English. All major assignments must be typewritten. {Fall, Spring}

**293. Topics. (1-3)**

**350. Vocational Office Laboratory. (2-3)** Weber
Work experience (6-9 hour per week) for college credit under supervision in approved work station.
Prerequisites: business education skills courses and permission of instructor. {Summer, Fall, Spring}

## PROFESSIONAL

**391. Undergraduate Problems. (1-3)** Weber

**439. Teaching of Business Subjects. (3)** McQueen
{Offered upon demand}

***443. Coordination Techniques in Vocational Cooperative Programs. (3)** Weber, Cunico
(Also offered as SATE, I Ed 443.) Development of present practices in work experience programs for secondary school and post secondary students. Special emphasis is given to organization and administration of vocational education cooperative part-time plans for distributive, office, and industrial occupations.

**461. Student Teaching in the Secondary Schools. (3-6-9, maximum of 15)** McQueen, Weber
{Fall, Spring}

**462. Student Teaching in the Secondary Schools. (3-6-9, maximum of 15)** McQueen, Weber
{Fall}

**463. Student Teaching in the Secondary School: Methods. (6-15)** McQueen, Weber
{Fall}

***485. Measurement and Evaluation Techniques. (3)**
(Also offered as I. Ed, SATE 485.)

***492. Workshop in Business Education. (1-4)**
{Offered upon demand}

***493. Topics. (1-3)**

**495. Field Experience. (3-6, maximum of 12)** Weber
(Also offered as Art Ed, Ed Adm, Ed Fdn, Phys Ed, Recrea, H Ec Ed, SATE 495.) Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

## GRADUATE

***501. Foundations of Vocational Business Education. (3)**

***503. Readings in Vocational Business Education. (3)**

***505. Development, Selection, Use and Organization of Instructional Materials. (3)**
(Also offered as I. Ed, SATE 505.)

***510. Developments in Industrial and Vocational Education. (3)**
(Also offered as SATE, I Ed 510.)

***511. Instructional Trends and Research in Typewriting Education. (3)**

***512. Instructional Trends and Research in Shorthand Education. (3)**

***513. Instructional Trends and Research in Bookkeeping and Accounting Education. (3)**

***514. Instructional Trends and Research in Socio-Business Education. (3)**

***515. Methods and Materials in Vocational Office and Distributive Education. (3)**

***523. Administration of Industrial and Vocational Programs. (3)**
(Also offered as I. Ed., SATE 523.)

# Available for graduate credit except for graduate majors in economics or history.

° Maximum of 6 hours credit allowed in Arts and Science and Pharmacy.

¶No credit allowed toward a degrees in Colleges of Arts and Sciences and Pharmacy.

**#*546. Economic Education. (2 or 4)**
(Also offered as Econ, SATE 546.)

***591. Graduate Problems. (1-3 hours each semester)**

***592. Workshop in Business Education. (1-4)**

***593. Topics. (1-3)**

***595. Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisite: permission of instructor.

# INDUSTRIAL EDUCATION

## TECHNICAL

Courses in this section may be offered upon demand in summer session.

**101. Technical Math. (3)** Cunico, Nesbitt
Practical application of algebra, geometry, and trigonometry in the solution of applied problems found in industrial education. Also to include graphical mathematics, metrification, and the use of handbooks and data tables. 3 lectures. {Spring}

**110L. Machine Woodworking. (3)** Staff
Introduction to the set-up and safe operation of common woodworking tools. Includes project design and construction involving hand and power woodworking processes, turning, and lamination. 2 lectures, 3 hrs. lab. {Fall, Spring}

**111L. Introduction to Graphic Communication. (3)** Nesbitt, Cunico
Introduction to graphical representation including the graphic language, geometric construction, multiview projection, dimensioning, sectional views, and auxiliary views. 2 lectures, 3 hrs. lab. {Fall}

**112L. Intermediate Graphic Communications. (3)** Nesbitt, Cunico
Designed to continue the study of basic drafting techniques studied in I Ed 111L. Includes a study of tolerance dimensioning, pictorial representation, threads and fasteners, detail and assembly, charts and graphs, and descriptive geometry. 2 lectures, 3 hrs. lab.
Prerequisite: 111L. {Spring}

**120L. Machine Metalworking. (3)** Field, Nesbitt
Survey of machine metalworking with emphasis in the various processes and practices of metal machining. Emphasis on working with the metalworking lathe, shaper, vertical milling machine, surface grinder, and band saw. Maintenance and repair of tools and machines. 2 lectures, 3 hrs. lab. {Fall}

**165. Safety, Service and Preventive Maintenance. (3)** Cunico
The principles, practices, and applications of industrial education laboratory safety combined with service and preventive maintenance of laboratory equipment and tools. 2 lectures, 3 hrs. lab. {Fall}

**220L. Manufacturing Technology. (3)** Field
Survey course dealing with the careers and activities relative to the manufacturing industries in the United States. Students will be exposed to and involved in such areas as management functions, research and development, production engineering, production, marketing, industrial relations, and financial affairs. 2 lectures, 3 hrs. lab. {Spring}

**225L. Design in Industrial Arts. (3)** Field, Taylor
Design theory and principle as applied to the research and development functions of industry. Product development via team organization, brainstorming, data analysis, oral presentations, and creative problem solving. 2 lectures, 3 hrs. lab. {Offered upon demand}

**230L. Power Mechanics. (3)** Nesbitt, Taylor
A survey course relative to the internal combustion engine in today's society. Experiences in the maintenance and repair, with reference to the consumer, of automotive and various small engines. 2 lectures, 3 hrs. lab. {Fall}

**245. Slide Rule. (2)**
The use of the various scales for solving technical problems. 2 lectures. {Offered upon demand}

**261L. Drafting Conventions and Simplified Standards. (2)**
Arrowless and tabular dimensioning, simplified drafting, point-to-point dimensioning, datum line dimensioning, and true positional dimensioning. 1 lecture, 3 hrs. lab. {Offered upon demand}

**270L. Construction Technology. (3)** Taylor
A survey course dealing with the materials and processes common to residential construction. A study of planning, leveling, excavating, foundations, walls, partitions, roof structures, plumbing, electrical, insulation, heating and air conditioning. 2 lectures, 3 hrs. lab. {Fall}

**280L. Introduction to Electronics. (3)** Cunico
Survey of electrical theory and its application in the fields of communications and electronics. Individual and group experiences derived through experimentation and construction of electrical projects. 2 lectures, 3 hrs. lab. {Fall, Spring}

**285L. Welding. (3)** Cunico, Field, Nesbitt
Survey of the welding processes, including electric, acetylene, and limited inert gas. Techniques, methods and practices are covered with emphasis on the joining and cutting of common metals. 2 lectures, 3 hrs. lab. {Fall, Spring}

**312L. Architectural Drafting. (3)** Taylor
A study of architectural drafting techniques. Standard foundation plans, floor plans, elevations, electrical, plumbing, plot layouts, and construction details for residential dwellings. 2 lectures, 3 hrs. lab.
Prerequisite: 111L. {Spring}

**335L. Intermediate Power Mechanics. (3)** Nesbitt, Taylor
Hydraulic, pneumatic, and mechanical methods of transmitting power. Theory and function of gear and hydraulic power transmission. 2 lectures, 3 hrs. lab.
Prerequisite: 230L or equivalent. {Spring}

**350L. Cabinet Making. (3)** Taylor
A study of standard cabinetmaking design and procedures. Includes basic case construction, frame and panel construction, shelves and interiors, tops, legs, rails, door, and drawer construction. Individual students are required to research and set-up advanced machine operations for production work. 2 lectures, 3 hrs. lab. Prerequisites: 110L and 111L. {Fall}

**365L. Advanced Machine Metalworking. (3)** Field, Nesbitt
Building upon the processes and practices of I Ed 120L, metallurgy, machine design, and advanced processes on the vertical milling machine, and tool grinder are emphasized. 2 lectures, 3 hrs. lab.
Prerequisite: 120L or equivalent. {Spring}

**380L. Advanced Electronics. (3)** Cunico
Application of the theories and principles involved in the use of vacuum tubes, power supplies, amplifiers, receivers and transmitters. Introduction to transistor principles and their application. 2 lectures, 3 hrs. lab.
Prerequisite: 280L or equivalent. {Fall}

**386L. Metal Fabrication. (3)** Field, Nesbitt
Application of the various aspects and processes in the hot and cold forming of metal. Techniques in the use of tools and equipment for metal fabrication such as sheet metal, metal spinning, forging and ornamental metal. 2 lectures, 3 hrs. lab.
Prerequisite: 285L or equivalent. {Fall}

**410L. Industrial Plastics. (3)** Field
A study of the materials, processes, and equipment utilized in the production of plastic materials and products, as well as an introduction to the industry itself. Students will be introduced to the characteristics of plastics, major principles of mold design and construction, and the characteristics of various molding, forming, fabricating, and finishing processes. 2 lectures, 3 hrs. lab.
Prerequisites: 110L and 120L. {Summer or Spring}

**415L. Hot Metal Processes. (3)** Field, Nesbitt
Hot metal processes, including basic foundry technology (pattern making, core boxes, and nonferrous casting), forging, and heat treatment of metal (casehardening, tempering, and annealing). 2 lectures, 3 hrs. lab.
Prerequisites: 110L and 120L. {Spring}

**475L. Metal Technology. (1-3)** Field, Nesbitt
Advanced course designed to meet the individual needs of students wishing to concentrate in a specialized area of metalworking. Arranged hours.
Prerequisites: 120L, 285L, and 415L. {Fall, Spring}

**480L. Wood Technology. (1-3)** Taylor, Cunico
Advanced course designed to meet individual needs of students wishing to concentrate in a specialized area of woodworking. Arranged hours.
Prerequisites: 110L and 270L. {Fall, Spring}

## PROFESSIONAL

**105. Introduction to Industrial Education. (2)** Cunico, Field, Nesbitt, Taylor
Seminar in history, philosophy, and current trends of industrial education; including an orientation to teaching and the UNM Industrial Education Teacher Preparation Program. 2 lectures. {Spring}

**293. Topics. (1-3)**

**391. Problems. (1-3)**
Individually designed research in industrial education.
Prerequisite: permission of instructor. {Offered upon demand}

**433. Teaching of Industrial Subjects. (3)** Cunico, Field, Nesbitt, Taylor
Methods of developing instructional units, teaching methods associated with industrial curricula, and the selection and evaluation of teaching materials used in the classroom. {Offered upon demand}

**461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 12)** Field, Cunico
Prerequisite: 433.

**463. Student Teaching in the Secondary Schools: Professional Educaiton Block. (6-15)** Field, Cunico
Prerequisite: application and approval during the spring semester immediately preceding student teaching. {Fall}

**466. Theory and Organization of Industrial Education. (3)** Cunico, Field, Nesbitt, Taylor
An analysis of organizing and teaching of industrial subjects as found in the modern school. {Offered upon demand}

**492. Workshop in Industrial Education. (1-4)**
For degree restrictions, see p. 37 of this catalog. {Offered upon demand}

**493. Topics. (1-3)** Staff

**495. Field Experience. (3-6, maximum of 12)** Field, Cunico, Taylor
(Also offered as Art Ed, Bus Ed, Ed Adm, Ed Fdn, Phys Ed, Recrea, H Ec Ed, SATE 495.) Planned and supervised professional laboratory of field experiences in agency or institutional setting. {Offered upon demand}

## GRADUATE STUDY

Will be offered upon demand.

***410. Industrial Plastics. (3)** Field

***443. Coordination Techniques in Vocational Cooperative Programs. (3)** Cunico,
(Also offered as SATE, Bus Ed 443.)

***456. Science, Technology, and Human Values: Implications for Education. (3)**
(Also offered as Ed Fdn, SATE 456.) Examination of the continuing impact of science and technology, with emphasis on changing values and traditions. Structure, function, and curriculum of educational institutions will be analyzed with a view toward assisting their clientele to cope with, and to influence, scientific and technological change.

***482. Instructional Analysis. (3)** Cunico, Nesbitt

***483. World of Construction. (3)** Field, Cunico, Taylor
{Summer only}

***484. Manufacturing Curriculum/Development and Implementation. (3)** Field
{Summer only}

***485.** [481.]**Measurement and Evaluation Techniques. (3)** Cunico
(Also offered as SATE, Bus Ed 485.)

***493. Topics. (1-3)** Staff

***505. Development, Selection, Use, and Organization of Instructional Materials. (3)** Cunico, Field, Taylor, Nesbitt
(Also offered as SATE, Bus Ed 505.)

***510. Development in Industrial and Vocational Education. (3)** Nesbitt, Taylor, Cunico, Field
(Also offered as Bus Ed, SATE 510.)

# Available for graduate credit except for graduate majors in economics or history.

***511. Laboratory Planning and Design. (3)** Field, Nesbitt

***515. Industrial Accident Prevention. (3)** Nesbitt, Cunico

***523.** [520.]**Administration of Industrial and Vocational Programs. (3)** Cunico, Field, Nesbitt
(Also offered as SATE, Bus Ed 523.)

***525. Advanced Technical Knowledge and Skills. (3)††** Cunico, Field, Nesbitt, Taylor

***591. Problems. (1-3)**

***592. Workshop. (1-4)**
For degree restrictions consult the Graduate Programs Bulletin.

***593. Topics. (1-3)**

***595. Advanced Field Experience I and II. (3, maximum of 6)††**

# EDUCATION, SPECIAL EDUCATION

Gary W. Adamson, Chairperson
Education Administration Building 100, 277-5018

**PROFESSORS:**

Gary W. Adamson, Ed.D., University of Kansas
Roger L. Kroth, Ed.D., University of Kansas
Richard L. McDowell, Ed.D., University of Kansas
Frank E. Papscy, Ph.D., New York University
Marian N. Shelton, Ph.D., University of Oklahoma
Billy L. Watson, Ed.D., University of California

**ASSOCIATE PROFESSORS:**

James S. Everett, Ed.D., University of Kansas
Eloy R. Gonzales, Ph.D., University of New Mexico
Ernest K. Lange. Ed.D.,University of New Mexico
Henry J. Pepe, Ed.D., University of Kansas
Deborah D. Smith, Ed.D., University of Washington
Glen D. Van Etten, Ed.D., University of Kansas

**LECTURER:**

M. Carlene Van Etten, Ed.S., George Peabody College for Teachers

**CURRICULUM**

**201. Education of the Exceptional Person. (3)** J Smith
Designed to provide a survey of the characteristics and educational needs of exceptional children. To include definition, etiology, charateristics, and various educational alternatives for each of the exceptionalities.
Corequisite: 204. {Fall, Spring}

**202. Communicative Disorders. (3)**
(Also offered as Com Ds 202.) Nature of communicative disorders, including speech, hearing, and language disorders in children and adults. Methods of identification and remediation.

**204. Introduction to Special Education. (2)** Staff
Work experience and seminars in special education settings. Required of all undergraduates.
Corequisite: 201, student must recieve a B or better before being screened into the Special Education Teacher Training Program. {Fall, Spring}

**294. Teaching Music in Elementary Schools. (3)**
(Also offered as Mus Ed 294.) Designed for music education majors dealing with teaching music in grades K-6. Encompasses the role of the consultant, curriculum development and materials of instruction.
Prerequisite: Music 194. {Fall, Spring}

**297. Music for Special Education. (3)**
(Also offered as Mus Ed 297.) The therapeutic and educational values of music in the development of children in special education. Methods and materials of instruction to assist teachers in their work with physically, mentally, and emotionally disturbed children.

**302. Communicative Disorders. (3)**
(Also offered as Com Dis 302.) Nature of communicative disorders, including speech, hearing, and language disorders in children and adults. Methods of identification and remediation.
Prerequisites: Com Dis or Sp Com 280 or permission of instructor. {Fall, Spring}

**306. Introduction to Behavior Management. (3)**
Provides an introduction to behavioral principles and procedures in application with children and youth. The course covers planning, environmental organization and behavioral principles.
Prerequisites: Spec Ed 201 and 204. {Fall, Spring}

**383. Education of the Mexican-American: Trends, Issues, Problems. (3)**
(Also offered as Ed Fdn 383.) Educational trends, issues and problems of the Mexican-American and the solutions necessary to alleviate these problems.
Prerequisite: permission of instructor. {Summer, Fall, Spring}

**391. Problems. (1-3, maximum of 6)**
Prerequisite: permission of instructor. {Offered upon demand}

***408. Special Education in the Regular Classroom. (3)** Everett
Provides regular educators with skills to assist mildly handicapped children in the regular class and provides special educators with skills and strategies to assist regular teachers with mildly handicapped children in their class. {Fall, Spring}

**409. Affective Education and the Exceptional Person. (3)** Shelton
This course develops communication skills, values clarification methods, non-verbal skills, and other effective techniques as they relate to the exceptional person and his/her teacher. Special emphasis is placed on social and psychological problems in special education. {Fall, Spring}

***420.** [320.]**Nature and Needs of the Mentally Retarded. (3)** G. Van Etten
This course offers an intense study of the social, medical, emotional, physical, and mental characteristics of mentally retarded children. Emphasis is placed on classification, diagnosis and treatment from medical, psychological, sociological, and educational points of view.
Prerequisite: 201 or graduate status. {Fall}

***427. Problems of the Hearing Impaired. (3)**
(Also offered as Com Dis 427.) Problems encountered by the deaf and hard of hearing, including communication abilities, psychological and sociological adjustment, educational achievement, and vocational placement. {Fall, Spring}

**430. Nature and Needs of the Behavior Disordered Person.** [Nature and Needs of the Behaviorally Disordered.]**(3)** McDowell
An introductory course on the characteristics of emotionally or behaviorally disordered children. Emphasis is placed on identification, behavioral description, classification, and intervention stategies in various therapeutic environments. {Fall}

**440. Nature and Needs of Learning Disabled Persons. (3)** G. Van Etten, Watson
An introductory course on the characteristics of the learning disabled child. Emphasis is placed on historical development of the field, on characteristics, diagnosis, and definitions, and on research findings concerning classification. {Fall}

**452. Teaching the Severely/Profoundly Handicapped. (3)**
Strategies and techniques for teaching the severely handicapped (TMR) child.
Prerequisites: 201, 204, 320, and program of studies (contract) on file. {Spring}

**462. Student Teaching in the Secondary Schools. (3-6-9, maximum of 15)**
Corequisite: 408, program of studies (contract) on file and student teaching application form (yellow) completed one semester before enrollment into Spec Ed 462. {Fall, Spring}

**463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)**
{Summer, Fall, Spring}

***465. Art and the Exceptional Child. (3)**
(Also offered as Art Ed 465.) {Fall, Spring}

***467. Survey of Physical Defects. (3)** Staff
(Also offered as PE 467.) To investigate the etiology, characteristics, and treatment programs necessary for teaching the physically handicapped child.
Prerequisites: 201, 204, and program of studies (contract) on file. {Fall}

***492. Workshops in Special Education. (1-4)**
Prerequisite: permission of instructor. Carries graduat credit when specifically approved by the Office of Graduat Studies. Consult this catalog and the Graduate Program Bulletin for degree restrictions.

***493. Topics in Special Education. (1-3)** Staff

**495. Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting.
Prerequisite: permission of instructor. {Summer, Fall Spring}

***503. Instructional Strategies in Special Education. (3** Van Etten, C.

***504. Practicum in Special Education. (3-6)** Staff
Prerequisites: major in department and permission of instructor. {Offered on demand}

***505. Seminars in Special Education. (3)**

***508. Techniques of Parent Counseling. (1,2,3)** Kroth
(Also offered as Guid 510.)

***509. Affective Education and the Exceptional Person. (3** Shelton

***513. Curriculum Development in Special Education. (3** Van Etten, C.

***520. Nature and Needs of the Mentally Retarded. (3)** Va Etten, G

***521. Motor Learning of the Handicapped. (3)**
(Also offered as PE 521.)

***522. Motor Learning of the Handicapped. (3)**
(Also offered as PE 522.)

***526. Motor Assessment of the Handicapped. (3)**
(Also offered as PE 526.)
Prerequisite: undergraduate major or minor in physical education, recreation, special education or permission instructor.

***530. Nature and Needs of the Behavior Disordered. (3** McDowell

***532. Education of Behaviorally Disordered. (3)** McDowe

***540. Nature and Needs of Learning Disabled Persons (3)** G. Van Etten, Watson

***542. Teaching the Learning Disabled. (3)** Smith D

***552. Teaching the Severly/Profoundly Handicapped. (3** Van Etten C.
Prerequisites: 420/520. {Offered upon demand}

***564. Administration and Use of Diagnostic Tests in Special Education. (3)** Gonzales, Pepe, Watson
Prerequisite: Ed Fdn 474 or permission of instructor. {Offered upon demand}

***565. Art for the Exceptional Child. (3)**
(Also offered as Art Ed 565.)

***566. Differential Diagnosis I. (3)** Gonzales, Pepe
Prerequisites: 564 or permission of the instructor. {Fall an upon demand}

***567. Differential Diagnosis II. (3)** Pepe, Watson
Prerequisite: 566. {Spring and upon demand}

***572. Teaching the Gifted Person. (3)** Staff
Prerequisite: 570. {Spring and upon demand}

***588. Organizations and Supervision of Special Educatio Programs. (3)** Everett

***591. Problems. (1-3 hrs. each semester)** Staff
Prerequisite: permission of instructor. {Offered upo demand}

***592. Workshops in Special Education. (1-4)** Staff
Carries graduate credit when specifically approved by th Office of Graduate Studies. Consult this catalog and th Graduate Program Bulletin for degree restrictions. {Offere upon demand}

***593. Topics. (1-3)** Staff
{Offered upon demand}

***595. Advanced Field Experience. (3-6, maximum of 1** Staff
{Summer, Fall, Spring}

§Maximum of 6 hours credit allowed in Arts and Sciences No credit allowed in Pharmacy.

***599. Master's Thesis. (1-6 hrs. per semester)** Staff

***630. Clinical and Behavioral Aspects of Behavior Disorder. (3)** McDowell

***640. Clinical Aspects of Learning Disabilities. (3)** Watson

***696. Internship. (3-6, maximum of 12)** Staff

***699. Dissertation. (3-12 hrs. per semester)** Staff

# ELECTRICAL ENGINEERING AND COMPUTER ENGINEERING.

See Engineering, Electrical

# ELEMENTARY EDUCATION

See Education, Elementary

# ENGINEERING

The courses listed in this category are of three types: (1) engineering courses for students not majoring in engineering, (2) general courses for engineering students, and (3) courses taken by students participating in the Engineering Cooperative Education Program.

## I. ENGINEERING COURSES FOR STUDENTS NOT MAJORING IN ENGINEERING

These courses are designed for students in the humanities, social sciences, fine arts, and education.

***®320. Engineering In Its Social Context. (3)**
Impact of technology on society; conflict and resolution between human values and technological society; public decision making and individual moral-ethical-political considerations; systems approach to analysis and design, incorporating socio-economic, ecological, ethical, and political factor. {Fall}

***®322. Special Topics. (1-3)**
Selected topics in technologies of current interest. {Offered upon demand}

***®337. Water Pollution Control. (3)**
The practices of water use, the technology of water pollution control, the measurement of water pollutants, and the impact of polluted water on the environment. Laboratory demonstrations. {Fall}

***®338. Air Management and the Environment. (3)**
Surveys the field of air pollution and presents concepts in a non-mathematical way. Air pollution is placed in perspective with other ecological problems. Topics include: environmental services management; pollutants and sources: technological, meteorological, biomedical, social, economic, political, and legal consideration. {Spring}

**340. Personal Computers. (3)**
Applications of home computers to entertainment, education, safety, automobiles, appliance control, bookkeeping, etc. {Offered upon demand}

***®350. Transportation and Society. (3)**
Surveys the history, present state, and possible future developments in the field of transportation. Topics will include the economic, environmental, and social impact of transportation systems and the studies and planning that go into their selection and location. The interdependence of transportation and urban planning will be stressed. {Spring}

***®360. Computers and Society. (3)**
Interrelation between technology and society via computers. Logic structures underlying use of computers in design, analysis, communication, and control will be studied together with application to law, society, finance, art and technology. Basic knowledge of algebra will be assumed. Approach is non-mathematical. {Offered upon demand}

***®370. Materials in Today's Environment. (3)**
Explores the technology which provides a wide range of materials in our technological age and discusses critically the societal impact: history of materials, basic materials science, concepts of material selection, and materials disposal and recycling. {Fall}

***®380. Applications to Nuclear Energy. (3)**
Designed to acquaint the non-technical student with nuclear energy and its peaceful applications in many areas affecting human affairs. Includes atomic and nuclear structure, fission, fusion, nuclear reactors, nuclear fuel cycle, nuclear explosives, accelerators, applications of radioisotopes, and socio-economic considerations. {Spring}

***®382. Energy and the Environment. (3)**
Energy resources, energy conversion, and the effect on the environment. Includes survey of world and U.S. energy supply and demand; energy and the economy; comparison of fuels—fossil, nuclear, hydro, solar, winds, and others; energy conversion processes; and the associated environmental effects—air pollution, water pollution, thermal pollution, nuclear radiation, and others. {Fall}

**384. Automotive Engines and Fuels. (3)**
A course for the non-technical student on the principles of the internal combustion engine and their fuels. The emphasis is on the present automotive engine and current and near-future fuel types. Topics considered also include fuel economy, alternate fuels, air pollution, the place of the automobile in the U.S. and world energy situation, and a survey of future engine types. {Fall}

***®390. Technology Assessment. (3)**
The systematic study of the social and environmental impacts of new technologies, including technological developments, alternatives, costs and benefits, social choices and policy options. {Offered upon demand}

## II. GENERAL COURSES FOR ENGINEERING MAJORS—ENGR-G

**115L. [111L.] Introduction to Engineering. (1)**
Description of the engineering profession, orientation to engineering education,introduction to the engineering design process, development of communication skills. 1 hr. lecture, 1 hr. lab. {Fall, Spring}

**120L. Computer Programming for Engineers.** [Engineering Computational Methods.]**(3)**
A structured programming approach to digital computer programming using the FORTRAN computer language; applications in engineering problems, empirical equations, and calculus of finite differences; use of computers in batch and time-sharing modes.
Prerequisite: eligibility for admission to Math 162. 2 hrs. lecture, 2 hrs. lab. {Summer, Fall, Spring}

**122L. [112]Introduction to Engineering Methods. (3)**
Engineering graphics and computational skills taught in two equal blocks.
Prerequisite: eligibility for admission to Math 162. 2 hrs. lecture, 4 hrs. lab. {Summer, Fall, Spring}

**301. Seminar in Engineering Practice. (1)**
A series of presentations by practicing engineers, emphasizing the many facets of engineering in the real world. {Fall}

## III. COOPERATIVE EDUCATION PROGRAM

Students enrolled in the Cooperative Education Program (see p. 46) are required to register in Engr 105 while on work phase and in one of the appropriate evaluation courses during the semester immediately following each work phase.

**105. Cooperative Education Work Phase. (0)**
$20.00 fee. (Required each work phase.)

**109. Evaluation of Cooperative Education Work Phase 1. (1)**

**110. Evaluation of Cooperative Education Work Phase 2. (1)**

**209. Evaluation of Cooperative Education Work Phase 3. (1)**

**210. Evaluation of Cooperative Education Work Phase 4. (1)**

**309. Evaluation of Cooperative Education Work Phase 5. (1)**

**310. Evaluation of Cooperative Education Work Phase 6. (1)**

# ENGINEERING, CHEMICAL AND NUCLEAR

David M. Woodall, Chairperson
Farris Engineering Center 209A, 277-5431

**PROFESSORS:**
Chen Yen Cheng, Ph.D., Kyoto University
J. Craig Robertson, Ph.D., Glasgow University
Glenn A. Whan, Ph.D., Carnegie Institute of Technology[1]

**ASSOCIATE PROFESSORS:**
David Kauffman, Ph.D., University of Colorado[1]
Richard W. Mead, Ph.D., Associate Chairperson, University of Arizona[1]
H. Eric Nuttall, Ph.D., University of Arizona[1]
Frank L. Williams, Ph.D., Stanford University
Ebtisam S. Wilkins, Ph.D., University of Virginia
David M. Woodall, Ph.D., Cornell University

**ASSISTANT PROFESSORS:**
Gary W. Cooper, Ph.D., University of Illinois[1]

**DEPARTMENTAL CURRICULA**

See pp. 47-48.

## CHEMICAL ENGINEERING COURSES

**251L. Chemical Calculations. (3)**
Extensive problem work in the stoichiometric principles of chemistry, including composition changes, the material and energy balance, units and dimensions.
Prerequisites: Chem 122L or 132L, Engr 120. 2 lectures, 2 hrs. lab. {Summer, Fall}

**252. Introduction to Transport Phenomena. (3)**
The mechanisms and the related mathematical analysis of momentum, heat, and mass transfer. Molecular and turbulent mechanisms; fluid flow.
Prerequisites: Physcs 161, Math 264. {Summer, Spring}

**301. Thermodynamics. (3)**
(Also offered as ME 301.) Principles of thermodynamics. First and second laws, properties, and equations of state.
Prerequisites: Chem 121L, Physcs 161, Math 264. {Summer, Fall, Spring}

[1] Registered Professional Engineers.

****302. Chemical Engineering Thermodynamics. (3)**
Continuation of 301 with application to chemical engineering processes; physical and chemical equilibria.
Prerequisite: C or better in ChE/ME 301. {Spring}

**311. Unit Operations I. (3)**
Unit operations and their applications to the chemical industries: problems in conductive, convective, and radiative heat transfer as well as related topics.
Prerequisites: C or better in 252; corequisite: ChE 317 or NE 322L. {Fall}

**312. Unit Operations II. (3)**
A continuation of 311. Problems in mass transfer, simultaneous mass and heat transfer, and related topics.
Prerequisite: C or better in 251L and 311. {Spring}

**314L. Chemical Engineering Laboratory I. (2)**
Laboratory practice and experimental study of unit operations.
Prerequisites: 252 and 311. 6 hrs. lab. {Spring}

**315L. Chemical Engineering Laboratory II. (2)**
Experimental laboratory study of the unit operations covered by 311 and 312.
Prerequisites: 312 and 314L. 6 hrs. lab. {Fall}

****317. Chemical Engineering Analysis. (3)**
Application of analytical and numerical techniques to the solution of frequently encountered chemical engineering problems. Included are data analysis and interpretation; problem formulation; solution of ODE's and PDE's encountered in transport phenomena and kinetics; and elementary control theory.
Prerequisites: C or better in ChE 252, Math 316. {Fall}

****341. Air Pollution Control. (3)**
(Also offered as ME 341.) Technical analysis of problems of air pollution control presented. Relationships between sources and effects of air pollution studies. Methods for minimizing hazards of air pollution are considered from viewpoints of industrial manager, legislator, engineer, control official, and public. Information presented applied to study of local problems. Practical projects in pollution control conducted.
Prerequisites: Math 264, Physcs 161, Chem 121L, or equivalents, and junior standing. {Offered upon demand}

**370. Engineering Materials Science. (3)**
(Also offered as CE 370.) Structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics, and polymers.
Prerequisite: 301; CE 302 recommended. {Fall, Spring}

***431. Petroleum Process Engineering. (3)**
Oil and natural gas recovery, secondary recovery methods. The processing of petroleum, refinery-design methods, and operation. The manufacture of petro-chemicals from petroleum feed stocks. {Offered upon demand}

***432 Geothermal Engineering. (3)**
Geothermal energy engineering for electrical power production and thermal applications. Resource exploration and characterization, reservoir development and production, utilization systems, design analysis, and environmental control. {Offered upon demand}

***433. Mineral Process Engineering. (3)**
The processing of industrial minerals from mined ore to products will be investigated from a unit operations point-of-view. The metallurgy of iron, aluminum, copper, and uranium will be covered. {Offered upon demand}

**450. Chemical Engineering Economics. (3)**
Factors other than engineering and chemical which determine the feasibility of putting a chemical on the market. Particular reference to control of raw materials, markets, competition, patent situation, and related topics.
Prerequisite: Econ 200 or equivalent. {Fall}

***454L. Process Dynamics and Control. (3)**
Application of special mathematical techniques to the analysis of chemical processes and the elements of process control. Computer experience suggested.
Prerequisite: C or better in 317. {Spring}

***458. Advanced Chemical Engineering Principles. (3)**
The integration of the principles of transport phenomena, kinetics, process analysis, and related topics to obtain fundamental understanding of chemical process systems.
Corequisite: 454L. {Offered upon demand}

****461. Applied Chemical Kinetics. (3)**
The kinetics of homogeneous and heterogeneous catalytic and noncatalytic reactions for flow and nonflow processes. Elementary principles of chemical reactor design and operations.
Prerequisite: C or better in 312 and 317. {Fall}

***472. Chemical Engineering Materials. (3)**
Modern theory of corrosion, electrochemical principles, and electrolytic processes with applications. Methods of production of polymers and effect of controlled structure on properties. Use of polymers as engineering material. {Offered upon demand}

***474. Polymer Science and Engineering. (3)**
Basic chemistry and synthesis reactions of polymers. Effect of polymer structure and composition on mechanical properties. Viscoelastic behavior of amorphous polymers and response of crystalline polymers to stress. Electrical and optical properties. Fabrication, selection, and evaluation of plastics.
Prerequisite: 461 or equivalent; recommended: Chem 301. {Offered upon demand}

***®493L. Introduction to Design. (1)**
Introduction to principles used in chemical engineering design, including: process flowsheets, feasibility studies, equipment specification, and related topics.
Prerequisite: C or better in 302 and 311. 2 hrs. lab. {Fall}

***®494L. Chemical Engineering Design. (3)**
Practice in engineering creativity and decision-making. Selection of the optimum process for making a given product. Process design of equipment.
Prerequisite: C or better in 312 and 493L. 2 lectures, 2 hrs. lab. {Spring}

***521. Advanced Transport Phenomena I. (3)**
Prerequisite: 458 or equivalent. {Fall}

***522. Advanced Transport Phenomena II. (3)**
Prerequisite: 521 or equivalent. {Spring}

***523. Mass Transport Phenomena. (3)**
{Offered upon demand}

***530. Process Optimization. (3)**
{Offered upon demand}

***541. Catalysis. (3)**
{Offered upon demand}

***542. Advanced Chemical Engineering Thermodynamics. (3)**
{Fall}

***543. Irreversible and Statistical Thermodynamics. (3)**
{Offered upon demand}

***554. Advanced Process Dynamics and Control. (3)**
Prerequisite: 454L. {Offered upon demand}

***561. Kinetics of Chemical Processes. (3)**
{Spring}

***571. Thermodynamics of Materials. (3)**
Recommended prerequisite: 542 or equivalent. {Offered upon demand}

***575. Selected Topics in Material Science. (1-3)‡**
{Offered upon demand}

***576. Selected Topics in Aerosol Science. (3)**
{Offered upon demand}

## NUCLEAR ENGINEERING COURSES

**230. Nuclear Engineering Calculations. (3)**
Introduction to nuclear engineering and nuclear processes; nuclear fission, chain reactions, reactor principles, radiation, fusion, and the nuclear fuel cycle. {Spring}

****322L. [420.]Introduction to Nuclear Engineering and Measurements. [Fundamentals of Nuclear Engineering.](3)**
Nuclear properties, nuclear stability, radioactivity, decay modes, interaction of radiation with matter, macroscopic and microscopic cross sections, nuclear reactions, neutron interactions, reactor systems. Relevant experiments will be performed.
Prerequisites: Math 316 or consent of instructor. 2 lectures, 3 hrs. lab. {Fall}

****323L. [423.]Nuclear Detection and Measurement. [Radiation Measurements and Analysis.](3)**
Radiation detection techniques for radiations less than 20MeV. Experiments will be performed using gas, scintillation, and semiconductor counters and visual methods. Standardization of radionuclide and neutron sources is considered.
Prerequisite: 322L or equivalent. 2 lectures, 3 hrs. lab. {Spring}

***410. Nuclear Reactor Theory I. (3)**
The theory of nuclear chain-reacting systems with emphasis on computer methods used in current applications. Included are nuclear reaction rates, one-speed diffusion theory, and reactor kinetics.
Pre- or corequisite: 323L, Math 312. {Fall}

***413L. Nuclear Engineering Laboratory. (3)**
Laboratory investigations of the theory and practice of nuclear chain-reacting systems.
Prerequisites: 232L, 410. 1 lecture, 6 hrs. lab. {Spring}

****430. Introduction to Nuclear Engineering. (3)**
Principally for non-nuclear engineering majors. The nucleus and nuclear properties; fission process and chain reaction; survey of design and operation of reactors and associated equipment; effects, uses, and detection of radiation. {Spring}

***435. Introduction to Plasma Physics. (3)**
(Also offered as Physcs, Astr 435.) Plasma parameters, adiabatic invariants, orbit theory, plasma oscillations, hydromagnetic waves, plasma transport, stability, kinetic theory, non-linear effects, applications.
Prerequisite: consent of instructor. {Fall}

***464. Thermal-Hydraulics of Nuclear Systems. [Power Reactor Technology.](3)**
Nuclear system heat transfer; fluid flow; conduction and convection in single and two phase flow regimes; mass and energy balances; pressure changes; evaluation and application of convection coefficients; transient phenomena.
Prerequisites: ChE 301, 311, and Math 312 or their equivalents. {Fall}

***465. Nuclear Energy Technology. [Nuclear Power Systems.](3)**
Overview of commercial nuclear power including current and advanced reactor designs, reactor safety, power economics, enrichment, reprocessing, waste management, domestic and international safeguards and the regulatory process.
Pre- or corequisites: 323L, 410. {Spring}

***466. Nuclear Environmental Safety Analysis. (3)**
Radiation environment, transport, shielding, dose calculations, safety, monitoring, guidelines and regulations; radioactive waste handling and disposal; and the environmental impact statement.
Prerequisites: 322L or 430, Math 316. {Spring}

***476. Reactor Fuel Processing. (3)**
Fuel cycles in nuclear reactors; production of reactor fuels; processing of spent fuels by precipitation, solvent extraction, etc.; and separation of isotopes.
Prerequisite: 430 or equivalent. {Spring upon demand}

***485. Controlled Thermonuclear Reactor Technology. (3)**
Introduction to controlled thermonuclear reactor (CTR) technology. (1) Systems: characteristics of proposed CTR systems; (2) System design: material, scaling laws, plant cycle, economics, safety, shielding, blanket, magnets; (3) operation: startup, operating mode, burnup, tritium cycle, control.
Prerequisite: 323L or senior standing in engineering or physical sciences. {Fall}

***511. Nuclear Reactor Theory II. (3)**
Prerequisite: 410, Math 312. {Spring}

**#*513L. [514L]Nuclear Engineering Laboratory II. (1-3)**
Pre- or corequisites: 323L, 511. 1 lecture, 6 hrs. lab. {Spring upon demand}

***520. Radiation Interactions and Transport. [Interaction of Radiation and Matter.](3)**
Prerequisites: 323L and Math 312 or equivalent. {Spring upon demand}

***522L. Advanced Nuclear and Plasma Measurements. [Advanced Transport Phenomena II.](1-3)**
Prerequisite: 323L or consent of instructor. 1 lecture, 6 hrs. lab {Fall}

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# Registration for less than 3 credit only with approval of instructor.

**535. [480.]Stability of Fluid Plasmas.** [Advanced Concepts in Plasma Physics.](3)
Also offered as Physcs 535.)
Prerequisite: 435 (Physcs 435). {Spring 1981 and alternate years}

**560. Reactor Kinetics and Control. (3)**
Prerequisites: 511; recommended: EECE 446. {Fall upon demand}

**566. Methods of Nuclear Safety and Safeguards. (3)**
Prerequisites: 410, 465. {Spring upon demand}

**580. Advanced Plasma Physics.** [Plasma Science and Technology.](3)
Prerequisite: 435 (Physcs 435). {Spring 1982 and alternate years}

**582. Inertial Confinement Fusion. (3)**
Pre- or corequisite: 435 or consent of instructor. {Spring}

**610. Advanced Reactor Theory. (3)**
Prerequisite: 511. {Fall upon demand}

## INDIVIDUAL STUDIES, SEMINARS, AND JOINT COURSES

**51-452. Seminar (1, 1)**
Senior year. Reports on selected topics and surveys; presentation and discussion of papers from current technical journals, and topics of interest to chemical and nuclear engineers. {Fall, Spring}

**91-492. Undergraduate Problems. (1-3, 1-3 maximum of 6)‡**
Advanced studies in various areas of chemical and nuclear engineering. {Summer, Fall, Spring}

**95-496. Chemical and Nuclear Engineering Honors Problems I & II. (1-6, 1-6, maximum of 6)‡**
Senior thesis for students seeking departmental honors. {Summer, Fall, Spring}

**501-502. Chemical and Nuclear Engineering Seminar. (1-3, 1-3)‡**
{Fall, Spring}

****515. Special Topics. (1-3, maximum of 9)‡**
{Offered upon demand}

**525. Methods of Analysis in Chemical and Nuclear Engineering. (3)**
Prerequisite: Math 316 or equivalent. {Fall}

**526. Advance Analysis in Chemical and Nuclear Engineering. (3)**
{Spring}

**551-552. Problems. (1-3, 1-3 each semester)‡**

**599. Master's Thesis. (1-6 per semester)**
See Graduate Programs Bulletin for total credit requirements.

**699. Dissertation. (3-12 per semester)**
See Graduate Programs Bulletin for total credit requirements.

# ENGINEERING, CIVIL

Cornie L. Hulsbos, Chairperson
Wagner Hall 112, 277-2722 and 4829.

**PROFESSORS:**

John B. Carney, Jr., Ph.D., University of Arizona[1]
Richard H. Clough, Sc.D., Massachusetts Institute of Technology[1]
Marion M. Cottrell, M.S., University of New Mexico[1]
William R. Gafford, M.S., University of Texas[1]
Cornie L. Hulsbos, Ph.D., Iowa State University[1]
Roy L. Johnson, Jr., Ph.D., University of Wisconsin[1]
Jose E. Martinez, M.S., Iowa State University[1]
Gerald W. May, Ph.D., University of Colorado[1], (Dean)
Glenn A. Sears, Engr., Stanford University[1]
George E. Triandafilidis, Ph.D., University of Illinois[1]

**ASSOCIATE PROFESSORS:**

Jerome W. Hall, Ph.D., University of Washington[1]
James R. Matthews, Ph.D., University of Missouri Rolla[1]
Thomas L. Paez, Ph.D., Purdue University[1]
Cyrus O. Varan, Ph.D., University of Delaware

**ASSISTANT PROFESSORS:**

Richard J. Heggen, Ph.D., Oregon State University[1]
Bruce M. Thomson, Ph.D., Rice University[1]

**CURRICULUM**

See p. 48

**202. Engineering Statics. (3)**
Statics of particles and rigid bodies in two and three dimensions using vector algebra as an analytical tool; centroids; distributed loads; trusses, frames; friction.
Prerequisites: Physcs 160, Math 163. {Summer, Fall, Spring}

**§211. Introduction to Architectural Structural Analysis. (3)**
Gafford
Behavior of architectural structures under typical loads and resulting force systems; simply supported and continuous beams; properties of structural materials and shapes. Elementary mechanics of materials. Computer methods for solving typical problems.
Prerequisite: minimum of one semester of calculus. {Spring}

**270L. Construction Materials. (1)**
A laboratory study of the physical, mechanical, and chemical properties of engineering materials. 3 hrs. lab. {Fall, Spring}

**281L. Engineering Measurements. (3)**
Principles and theories of physical measurements of spatial quantities; theory of probable error and adjustment of observations; use of measuring instruments and systems using surveying techniques where desirable.
Prerequisite: Math 162 or permission of instructor. 2 lectures, 3 hrs. lab. {Fall, Spring}

**282L. Engineering Surveys. (2)**
Engineering applications of theories and principles developed in 281L; horizontal and vertical control surveys, topography, alignment curve geometrics, modern survey systems and instruments; introduction to photogrammetry and geodesy.
Prerequisite: 281L. 1 lecture, 3 hrs. lab. {Fall, Spring}

**302. Mechanics of Materials. (3)**
Stresses and strains associated with elastic and plastic behavior of members stressed in tension, compression, torsion, and flexure; Mohr's circle construction; principles of combined stresses and resultant deformation; columns and buckling phenomena; preliminary consideration of statically indeterminate members.
Prerequisites: 202, Math 264. {Summer, Fall, Spring}

**303L. Mechanics of Material Laboratory. (1)**
Laboratory practice in the application of strain measuring and indicating devices directed at verification of fundamental principles developed in 302; mechanical, electrical, and photoelastic equipment usage.
Corequisite: 302. 3 hrs. lab. {Fall, Spring}

**305. Structural Analysis I. (2)**
Analysis of determinate structures including beams, frames, roof and bridge trusses subjected to both fixed and moving loads by algebraic and graphical methods; introduction to deflection theory, moment-area, conjugate beams, and virtual work.
Corequisite: 302. {Fall, Spring}

****306. Structural Analysis II. (3)**
Analysis of statically indeterminate structure; use of moment-area, conjugate structure, energy, slope-deflection, and moment distribution methods; sidesway; influence lines; nonprismatic and curved members.
Prerequisites: 302, 305, or permission of instructor. {Fall, Spring}

**§312. Architectural Structure. (3)**
Approximate and simplified methods of design of building frame members in wood, metals, and reinforced concrete, including foundations, in accordance with current codes.
Prerequisite: 211. {Fall}

**324L. Structural Design in Metals. (3)**
Methods of design of tension, compression, and flexure members of metal including their connections; the analysis and design of structural elements of metal as consistent with modern practice.
Prerequisites: 302, 305. 2 lectures, 3 hrs. lab. {Fall, Spring}

**331L. Fluid Mechanics. (4)**
Fluid properties; fluids at rest; fluid flow principles, including continuity, energy, and momentum; compressible and incompressible fluid flow; open channel hydraulics; hydraulic machinery; laboratory study of basic principles of fluid mechanics and hydraulics.
Corequisite: ME 206L. 3 lectures, 3 hrs. lab. {Fall, Spring}

**332. Introduction to Hydrology.** [Water Resources and Hydraulic Engineering I.](2)
Basic engineering hydrology including precipitation, infiltration, runoff, flood routing, reservoir yield, statistical measures; water resources planning and economics.
Prerequisite: 331L. {Fall, Spring}

**336L. Introduction to Water And Wastewater Treatment.** [Sanitary Engineering I.](3)
Basic design concepts of water and wastewater treatment. Flow rates, characterization of water, materials balances, sedimentation, coagulation, flocculation, biological treatment, disinfection, land application, and alternative treatments.
Prerequisites: 331L, Chem 122L. 2 lectures, 3 hrs. lab. {Fall, Spring}

**340. Probabilistic Methods in Engineering I. (3)**
Applications of the theory of probability and statistics to the solution of civil engineering problems in material characterization, traffic flow, hydrology, construction management, system reliability and other areas.
Prerequisite: Math 264. {Fall}

**350. Engineering Economy. (3)**
(Also offered as ME 350.) A study of methods and techniques used in determining comparative financial desirability of engineering alternatives. Includes time value of money (interest), depreciation methods and modern techniques for analysis of management decisions.
Prerequisite: junior standing. {Summer, Fall, Spring}

**360L. Soil Mechanics. (3)**
Physical, chemical, and mechanical properties of soil as an engineering material; relation of properties to engineering problems.
Prerequisite: 302. 2 lectures, 3 hrs. lab. {Fall, Spring}

**§362. Soils and Foundations. (3)**
Engineering properties of various soil deposits, soil classification, and testing methods, foundation design principles and field inspection.
Prerequisite: 312 or permission of instructor. {Spring}

**370. Engineering Materials Science. (3)**
(Also offered as ChE, ME 370.) The structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics, and polymers.
Corequisite: 302. {Summer, Fall, Spring}

**382. Transportation Engineering. (3)**
Multimodal examination of the planning, design and operation of transportation facilities; social aspects and economic analysis of transportation system improvements.
Prerequisite: junior standing in engineering. {Fall, Spring}

***401. Advanced Mechanics of Materials. (3)**
(Also offered as ME 401.) State of stress and strain at a point, stress-strain relationships; topics in beam theory such as unsymmetrical bending, curved beams, and elastic foundations; torsion of noncircular cross-sections, energy principles.
Prerequisites: 302, senior standing. {Spring}

***402. Tensor Analysis and Continuum Mechanics. (3)**
(Also offered as ME 402.) Tensor analysis in Euclidean space, kinematics of continua, the stress tensor, linear constitutive equations for elastic solids, compressible viscous fluids, and viscoelastic media.
Prerequisites: 302, Math 311. {Offered upon demand}

**411. Reinforced Concrete Design. (3)**
Structural mechanics of concrete beams, slabs, columns, walls, and footings; checking and proportioning of members and connections in accordance with specifications for elastic, ultimate, and prestressed concrete design.
Prerequisite: 306. {Fall, Spring}

***415. Intermediate Structural Analysis. (3)**
Classical problems in structural analysis solved by use of matrix procedures; displacement and force methods with application to two-dimensional, statically indeterminate, framed structures.
Prerequisite: 306 or permission of instructor. {Fall}

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Registration for less than 3 credits only with approval of instructor.

[1] Registered Professional Engineers.

§ No credit allowed in College of Engineering.

***416. Design of Structural Systems. (3)**
Structural systems for building of various materials, including prestressed concrete, steel, and wood; codes and specifications; wind and seismic load provisions; structural failures. A design project is included.
Prerequisite: permission of instructor. {Spring}

***420. Plastic Theory of Structures. (3)**
Inelastic behavior of materials, ultimate capacities of structural elements; basic theorems of limit analysis; deflection estimates; application to structures. Special topics.
Prerequisite: 306 or permission of instructor. {Fall}

***421. Introduction to Structural Dynamics. (3)**
Basic theory of structural vibrations; structural response to dynamic loads; laboratory simulation of dynamic response of structures with electrical and mechanical analogies and applications of analog computer.
Prerequisites: 306, ME 206L, Math 316. {Spring}

***430. Applied Hydrodynamics. (3)**
Principles of dimensional analysis, dynamic similarity, flow nets, irrotational flow, gravity flow, unsteady flow, boundary layer theory, separation, cavitation, drag; pumps and turbines.
Prerequisite: 331L. {Offered upon demand}

***431. Intermediate Hydrology. (3)**
Hydrometeorology, interception, depression storage, infiltration, hydrograph analysis, flood routing, urban hydrology, groundwater analysis and utilization.
Prerequisite: 332. {Fall}

***432. Water Resources and Hydraulic Engineering.** [Water Resources and Hydraulic Engineering II.]**(3)**
Applied hydrology, hydraulics, water law, engineering economy, and water resources planning.
Prerequisite: 332. {Spring}

***436. Biological Wastewater Treatment.** [Sanitary Engineering II.]**(3)**
Principles and design of wastewater treatment systems which are dependent on biological organisms. Processes covered include suspended culture and fixed culture systems, nutrient removal, hybrid systems, land application and on-site treatment systems. Emphasis will be placed on fundamental interaction between the organisms, wastes, and receiving body of water.
Prerequisite: 336L. {Spring}

**437L. Aqueous Environmental Chemistry and Analysis.** [Water and Wastewater Analysis.]**(3)**
Summary of important concepts applicable to ecology, water and wastewater treatment. Topics include acid-base equilibria, alkalinity, hardness, nutrient cycles and forms, metals, and organic compounds in water. Emphasis will be on analytical procedures commonly used.
Prerequisite: 336L or permission of instructor. 2 lectures, 3 hrs. lab. {Fall}

***450. Probabilistic Methods in Engineering II. (3)**
Advanced applications of the theory of probability, statistics and stochastic processes to the solution of engineering problems. System reliability.
Prerequisite: 340 or Math 345. {Offered upon demand}

***452L. Computer Applications in Civil Engineering. (3)**
Use of digital computers to solve typical problems in various areas of civil engineering, including use of stored programs and preparation of original programs.
Prerequisites: Engr 120L or EECE 336, senior standing in engineering. 2 lectures, 3 hrs. lab. {Spring}

***453. Numerical Methods in Civil Engineering. (3)**
Methods of discrete analysis of engineering systems. Applications of numerical techniques to solve engineering problems.
Prerequisites: Engr 120L or EECE 336, Math 316 or equivalent. {Offered upon demand}

***461. Soil Engineering for Highways and Airfields. (3)**
Remote sensing of soils, air photo interpretation, seismic and resistivity soils surveys, soil mapping, excavation and embankments, slope stability and stabilization.
Prerequisite: 360L. {Fall}

***462. Foundation Engineering I. (3)**
Application of principles of soil mechanics to analysis and design of footings, piles, caissons, cofferdams, and other substructures.
Prerequisite: 360L. {Spring}

***463. Intermediate Soil Mechanics. (3)**
Soil-water relationships, shear strength, consolidation, introduction to physico-chemical properties of soils.
Prerequisite: 360L. {Fall}

***464. Rock Mechanics. (3)**
Geologic considerations; physical properties and engineering classification of intact rock; in situ behavior of rock masses; effect of geologic discontinuities on physical properties; application of rock mechanics principles to specific foundation problems; reinforcement of rock masses; controlled blasting and blast-induced vibrations.
Prerequisite: 360L. {Offered upon demand}

***470. Construction Methods and Equipment. (3)**
Comprehensive study of the ownership and operating costs, production rates, and operating characteristics of the major construction equipment types.
Prerequisite: senior standing. {Fall}

***471. Building Construction. (3)**
Engineering and architectural details within the framework of a building; floor and roof systems; bearing curtain walls; use and relative cost of materials; building codes.
Prerequisite: senior standing in engineering or architecture or permission of instructor. Architecture students must have successfully completed 312 or its equivalent. {Spring}

***472. Construction Contracting. (3)**
Management principles as applied to the conduct and control of a construction contracting business; estimating methods, bidding, construction contracts, bonds, insurance, project planning and scheduling, cost accounting, labor law, labor relations, and safety.
Prerequisite: senior standing. {Fall, Spring}

***473. Construction Cost Analysis. (3)**
Techniques of making quantity surveys and pricing of construction projects. Determination of production rates and cost control methods.
Prerequisite: 472 or permission of instructor. {Spring}

***475L. Materials Technology. (3)**
Theories of concrete-mix proportioning, use of concrete additives; testing of concrete aggregates and cement; asphalts; design of bituminous paving mixtures.
Prerequisite: senior standing in engineering. 2 lectures, 3 hrs. lab. {Offered upon demand}

***476. Highway and Airport Pavements. (3)**
Principles of Highway and Airport Pavement Design.
Prerequisite: 360L. {Spring}

***482. Highway and Traffic Engineering.** [Traffic Engineering.]**(3)**
Principles of the planning and geometric design of streets and highways, traffic design and control, environmental considerations and highway safety.
Prerequisite: 382. {Spring}

***483. Traffic Engineering Studies and Characteristics. (3)**
Highway traffic speed, volume, capacity, accidents, origin-destination, and parking; the road users and vehicles in traffic; models and theories describing traffic flow.
Prerequisite: 382. {Fall}

**490. Aspects of Professional Practice. (2)**
Business and legal aspects of the engineering profession; business ownership, contracts, property, agency, water rights, insurance, patents, litigation, arbitration, ethics, and professional registration.
Prerequisite: senior standing in engineering. {Fall}

***491-492. Special Topics in Civil Engineering. (1-3, 1-3, to a maximum of 6)**
Advanced studies in various areas of civil engineering.

**493. Special Topics in Civil Engineering—Honors. (1-3, to a maximum of 6)**
Prerequisite: 3.2 grade-point average. {Offered upon demand}

**494. Honors Seminar. (3)**
Prerequisite: 3.2 grade-point average. {Offered upon demand}

***501. Advanced Structural Analysis. (3)**
Prerequisite: 415 or permission of instructor. {Spring}

***502. Finite Element Methods in Solid Mechanics. (3)**
Prerequisite: 401 or permission of instructor. {Fall}

***506. Prestressed Concrete. (3)**
Prerequisite: 411. {Spring 1981 and alternate years}

***507. Design of Concrete Plates and Shells. (3)**
Prerequisite: 411. {Spring 1982 and alternate years}

***510. Advanced Structural Design in Metals. (3)**
Prerequisite: 324L. {Fall}

***516. Theory of Plates. (3)**
Prerequisite: 401 or permission of instructor. {Offered upor demand}

***517. Applied Discrete Mechanics. (3)**
Prerequisite: permission of instructor. {Offered upor demand}

***518. Elastic Stability. (3)**
Prerequisites: 401 or 402, Math 312, or permission o instructor. {Spring}

***519. Theory of Shells. (3)**
(Also offered as ME 542.)
Prerequisites: ME 516 and Math 312. {Offered upor demand}

***520. Vibration of Elastic Systems. (3)**
Prerequisites: 421 or ME 414 and Math 312. {Offered upor demand}

***521. Design of Structures for Dynamic Loads. (3)**
Prerequisites: 415, 421 or ME 414. {Offered upon demand}

***523. Random Vibrations. (3)**
(Also offered as ME 523.)
Prerequisite: 520 or permission of instructor. {Offered upor demand}

***531. Physical-Chemical Water and Wastewater Treatment.** [Advanced Water Treatment and Plant Design.]**(3-4)**
Prerequisite: 336L. {Fall}

***532. Advaned Physical-Chemical Water and Wastewater.** [Advanced Waste Water Treatment and Plant Design.]**(3-4)**
Prerequisite: 531. Spring

***533. Water Resources Engineering. (3)**
Prerequisite: permission of instructor. {Offered upon demand}

***534.** [534L.]**Environmental Engineering Chemistry.** [Advanced Sanitary Lab.]**(3)**
Prerequisite: 437L or permission of instructor. {Spring}

***535. Open Channel Hydraulics. (3)**
Prerequisite: 332. {Offered upon demand}

***536. Hydraulic Structures. (3)**
Prerequisite: 535. {Offered upon demand}

***538. Design of Water and Wastewater Treatment Systems. (3)**
Prerequisites: 436, 531 or permission of instructor. {Fall}

***551-552. Problems. (1-3, 1-3 hrs. each semester)**

***560. Advanced Soil Mechanics. (3)**
Prerequisites: 401 or 402, 463. {Offered upon demand}

***561L. Advanced Soil Mechanics Laboratory. (2)**
Corequisite: 463. 1 lecture, 3 hrs. lab. {Offered upon demand}

***562. Foundation Engineering II. (3)**
Prerequisite: 463. {Fall}

***563. Earth Structures. (3)**
Prerequisite: 463. {Spring}

***572. Construction Project Management. (3)**
Prerequisite: permission of instructor. {Spring}

***581. Highway Traffic Operations. (3)**
Prerequisite: 382. {Fall}

***582. Highway Traffic Design. (3)**
Prerequisite: 483. {Spring}

***583. Urban Transportation Planning. (3)**
Prerequisite: 483. {Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***623. Random Processes in Mechanics. (3)**
Prerequisite: 523 or permission of instructor. {Offered upon demand}

***650. Research. (1-6, to a maximum of 12)**

***660. Soil Dynamics. (3)**
Prerequisites: 401 or 402, 463. {Offered upon demand}

***691. Seminar. (1-3 hrs. each semester)**
{Offered upon demand}

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# COMPUTER SCIENCE

Cleve B. Moler, Chairperson
Farris Engineering Center 307A, 277-3112.

**PROFESSORS:**
Edward S. Angel, Ph.D., University of Southern California
Stoughton Bell, Ph.D., University of California (Berkeley)
Edgar J. Gilbert, Ph.D., University of California (Berkeley)
Cleve B. Moler, Ph.D., Stanford University
Donald R. Morrison, Ph.D., University of Wisconsin
William E. Walden, Ph.D., New Mexico State University.
**ASSOCIATE PROFESSOR:**
George F. Luger, Ph.D., University of Pennsylvania
Charles P. Crowley, Ph.D., University of Washington
**ASSISTANT PROFESSORS:**
Michael J. Manthey, Ph.D., State of New York at Bulfalo
Bernard M. E. Moret, Ph.D., University of Tennessee
Henry D. Shapiro, Ph.D., University of Illinois
**LECTURER II:**
Dennis S. Duncan, M.S., University of New Mexico

## CURRICULUM

Whenever a course has other courses as prerequisites, it is the intent that a grade of C or better in the prerequisite course is required to qualify as satisfying the prerequisite. See other section under College of Engineering, Computer Science Department for more information.

**150. Computing for Business Students. (3)**
An introduction to BASIC language programming on a time-shared computer system, which emphasizes computing techniques useful to prospective business analysts and managers, including flow-charting.
No Prerequisites. {Fall, Spring}

**154. Foundations of Computing Sciences. (3)**
Introduction to the formal concepts of computing science for the beginning student. Topics include induction, elementary logic, formal systems, and algorithmic processes.
Prerequisite: 150 or equivalent. {Fall, Spring}

**155. Introduction to Computer Programming.** [Problem Solving with the Computer.]**(4)**
(Also offered as Math 155.) An elementary introduction to the art of computing. The object of the course is an understanding of the relationship between computing and problem solving. A structured programming language will be introduced.
Prerequisite: Math 150 or equivalent ACT or math placement score. {Summer, Fall, Spring}

**237. Introduction to Data Processing. (3)**
Introduction to the COBOL programming language. Sample programming problems on inventory control, forecasting, production planning, accounting and data base management; advances principles of top down, modular design of programs by applying these principles to the solution of the sample programming problems. Programs will be evaluated on the basis of simplicity of style as well as correctness. Students will also document and verify a sequence of previously written programs.
Prerequisites: 150 or 155 or equivalent of one semester of programming. {Fall, Spring}

**253.** [256.]**Intermediate Programming. (4)**
A continuation of 155. Topics will include recursion, data abstraction, algorithmic program design, program testing, modification, documentation, correctness, and an introduction to data structures. Programming will be done in a block structured language.
Prerequisites: 154, 155. {Fall, Spring}

**255. Introduction to Computing Systems. (3)**
An introduction to machine language, internal representation of instructions and data, interaction between programs and the basic components of operating systems and computer architecture. Programming will involve the use of the department microcomputer laboratory.
Prerequisite: 253. {Fall, Spring}

**260. Fortran Programming. (1)**
An introduction to FORTRAN programming for experienced programmers. Topics will include team programming, translation of programs from other languages into FORTRAN; use of input/output facilities; other special features of FORTRAN.
Prerequisites: 253.

**263. Fundamentals of Data Structures. (4)**
A continuation of 253. A thorough covering of the basic uses and implementations of data structures. Topics will include data abstraction and correctness programs will include data abstraction and correctness. Programs will be written in FORTRAN.
Prerequisites: 253 or 300. {Fall, Spring}

****300. Block-Structured Programming. (5)**
Programming and problem solving in a block structured language. Topics include simple data structures, recursive procedures, large program organization, program verification, and validation, and file management. Credit not allowed for both 300 and 155/253.
Prerequisites: 1 year programming experience or EECE 344 or permission of instructor. {Fall, Spring}

**303.** [402.]**Fundamentals of Algorithms. (3)**
Introduction to the techniques useful in the analysis of the efficiency of algorithms.
Prerequisite: 263, {Fall, Spring}

**337. Survey of Computer Systems Organization and Software. (3)**
An overview of hardware/software configurations as integrated systems. Introduction to hardware modules, execution, operation, data, and system software, multiprogramming and multi-processing, functions of file and communications systems, and data management systems.
Prerequisite: 237. For Non-CS majors only. {Spring}

****355. The Syntax and Semantics of Programming Languages.** [The Syntax and Semantics of Programing Languages I.]**(3)**
A comparative survey of the features and structure of common programming languages including ALGOL; FORTRAN, PL/1, LISP, SNOBOL, COBOL. Students will write programs in each of these languages. Relation between form and meaning of programs will be explored with the use of phrases structure grammers.
Prerequisite: 263.

****357. Operating Systems Principles. (3)**
Experience in constructing basic software for operating systems. In addition to discussing general principles, students will be expected to first understand a simple supervisor and then to modify it.
Prerequisites: 255, 263, or permission of instructor.

****375. Introduction to Numerical Computing. (3)**
(Also offered as Math 375.) An introductory course covering such topics as interpolation, integration, solution of linear and nonlinear equations, and solution of ordinary differential equations. A single effective method will be studied for each topic and computer codes furnished. Emphasis will be on solving problems.
Prerequisites: calculus and some ability in programming. {Fall}

****390. Introductory Topics in Programming. (1-3)‡**
An introduction to computer programming for non-CS majors. This course is intended to provide students in other disciplines with an opportunity to learn to use contemporary computer languages and systems. Topics will vary from section to section. Typical topics are UNIX and C, FORTRAN, JCL, APL, BASIC, COBOL.
Prerequisites: Junior standing. {Offered upon demand}

***401. Modern Computer Architecture. (3)**
(Also offered as EECE 401.) A study of the design concepts of major importance in modern computers. Topics will include data bases, microprogramming, language-directed computers, parallel processors, and pipeline computers. Emphasis will be placed on the relationship of hardware design to programming and data structuring. Students will be expected to design a small computer via microprogram.
Prerequisites: EECE 238L and either CS 357 or EECE 437.

***403. Algorithm Heuristics. (3)**
Efficient problem solving techniques. Connection, search and tour problems. Branch and bound and backtracking. Dynamic programming. Developing heuristics.
Prerequisite: 263.

***420. Immigration I. (5)**
A fast paced course for well qualified graduate students whose previous degrees were not in Computer Science. Equivalent to 155, 253, 263 and part of 375.
Prerequisite: Graduate status or permission of instructor.

***421. Immigration II. (5)**
See 420. This course is intended for the same students as 420 and to be taken concurrently. Equivalent to 154, Math 317, CS 303 and the rest of 375.
Pre- or corequisite: 420 or equivalent, and graduate status or permission of instructor.

***422. Immigration III. (5)**
See 420 and 421. This course is intended for the same students as 420 and 421, and follows them. Equivalent to 255, 355 and 357.
Prerequisites: 420, 421, or equivalent and graduate status.

***433. Digital Computer Graphics and Communications. (3)**
(Also offered as EECE 433.) Introduction to graphic display devices, scopes, vector generation, character generation, and light-pen keyboard entry devices, programming computer displays. Concepts of online operation, including telecommunications. Methods of direct graphical design input.
Prerequisite: 263 and some knowledge of linear algebra.

***438. Information Processing Models of Cognition. (3)**
(Also offered as Psychology 467) Concepts of cognition from psychology and from computer science. Human factors, problem solving, game playing, teaching programming. Includes a project in cognitive modelling.
Prerequisites: 263 or permission of instructor.

***451. Mathematical Theory of Formal Languages. (3)**
The Chomsky hierarchy of languages and its relationships to automata needed as acceptors. Results on the equivalence between deterministic and non-deterministic models. Undecidability and intractability results.
Prerequisites: Math 317, CS 303 or consent of instructor.

***452. Simulation. (3)**
(Also offered as Mgt 532.) Study of a variety of simulation methods as an aid to managerial decisions involving both micro and macro-systems. Problems and projects involve active programming of simulations in at least one simulation language.
Prerequisites: ability to write programs in some language and Mgt 501 or knowledge of elementary probability and statistics and introductory calculus.

***453.** [302.]**Topics in Program Correctness.** [Design of Correct Programs.]**(3)‡**
Advanced studies in techniques of reliable program development. Correctness proofs, verification and validation, designing and testing for reliability.
Prerequisites: 303.

***454.** [446.]**Compiler Construction. (3)**
Syntax analysis and semantic processing for a block-structured language. Lexical analysis symbol tables, run-time management. Students will write a compiler.
Prerequisites: 255, 355.

***457. Principles of Artifically Intelligent Machines. (3)**
Survey of artificial intelligence exclusive of pattern recognition. Heuristic search techniques, game playing. Introduction of mechanical theorem proving.
Prerequisite: 263. {Fall}

***460. Advanced Software Methodology.** [Large-Scale Software.]**(3)‡**
Topics in software engineering and medium to large systems development, techniques of system analysis, specification, design and implementation, also team organizations, testing, project management.
Prerequisite: 355 and 357.

***463.** [555.]**Storage and Retrieval of Information.** [Data Structures.]**(3)**
Design, analysis and use of systems for storage and retrieval of information. Design of the query language. Searching, sorting, hashing, deleting and inserting.
Prerequisites: 255 and 263.

***475. Numerical Analysis I. (3)**
(Also offered as Math 475.) Numerical solution of linear and nonlinear systems of equations; the algebraic eigenvalue problem; round-off error.
Prerequisites: Math 314 or equivalent and some knowledge of FORTRAN programming. Students with credit for Math 375 should consult with instructor. {Fall}

***476. Numerical Analysis II. (3)**
(Also offered as Math 476.) Approximation of functions, integration and numerical solution of ordinary differential equations.
Prerequisites: 316 or 361 or equivalent and some knowledge of FORTRAN programming. Students with credit for 375 should consult with instructor. {Spring}

***487. Studies in Operating Systems. (3)**
Design and implementation techniques in operating systems. Issues in contemporary operating systems: kernels, process management and communication, memory and address space management, I/O and file system, resource allocation and scheduling, networking, protection, reliability.
Prerequisite: 357.

****490. Computing for Graduate Students.** [Computing for Liberal Arts Graduate Students.](3)
Elementary introduction to art of computing, including use of Computer Center resources, software packages, and programming. Student will be required to complete term project relating course to his/her major field of study.
Prerequisite: permission of instructor. Course cannot apply to major, minor or master's degree in CS.

**491. Special Topics - Undergraduates. (1-6)‡**
Undergraduate seminars in special topics in Computer Science. May be repeated for a total of 12 hours.
Prerequisite: permission of instructor.

***499. Individual Study. (1-3 hrs. per semester)‡**
Guided study, under the supervision of faculty member, of selected topics not covered in regular courses. May be repeated for a total of 6 hours.
Prerequisite: permission of instructor.

***502. Analysis of Algorithms. (3)**
Prerequisites: 303, Math 317. Recommended 403.

***503. Computability and Complexity. (3)**
Prerequisite: graduate standing; elements of logic. Recommended: 451.

***550. Programming Languages and Systems. (3)**
Prerequisite: 454.

***551. Individual Problem Solving. (1-3 per semester, to a maximum of 6)**
Prerequisite: permission of instructor.

***552. Advanced Topics in Compiler Construction. (3)**
Prerequisite: 454. Recommended: 451.

***553. Computer Evaluation of Mathematical Functions. (3)**
Prerequisites: 475-476 or equivalent, with permission of instructor. {Offered upon demand}

***557. Computational Mathematics. (3)†**
(Also offered as Math 557.) {Offered upon demand}

***559. Master's Computing Project. (3 or 6)‡**
Prerequisites: 12 semester hrs. credit toward master's degree and consent of instructor. {Offered upon demand}

***563.** [556.]**Design and Use of Data Base Systems.** [Information Retrieval.](3)
Prerequisite: 463.

***566. Pattern Recognition. (3)**
(Also offered as Math 566.) {Offered upon demand}

***587. Advanced Operating Systems. (3)**
Prerequisite: 487 or EECE 437.

***591. Special Topics. (1-6)‡**
Graduate seminar courses in special topics in computing science. Permission of instructor required.

***592. Colloquium. (1)‡**
Required of all graduate students. May be repeated up to a total of 4 hrs.

***650. Reading and Research. (3)‡**
Prerequisite: consent of instructor before registration. {Offered upon demand}

***691. Seminar in Computer Science. (1-6 hrs. per semester, may be repeated for total of 12 credit hours)‡**

***699. Dissertation. (3-12 hrs. per semester)**

# ENGINEERING, ELECTRICAL AND COMPUTER

Peter Dorato, Chairperson
Tapy Hall 209A, 277-2436 or 4924

**PROFESSORS:**
Edward S. Angel, Ph.D., University of Southern California
Lewellyn Boatwright Jr., Ph.D., Assistant Chairman, University of Illinois'
Victor W. Bolie, Ph.D., Iowa State University'
Martin D. Bradshaw, Ph.D., Carnegie Institute of Technology'
William J. Byatt, Ph.D., University of Alabama
Roy A. Colclaser, Ph.D., University of New Mexico'
Ronald C. DeVries, Ph.D., University of Arizona
Peter Dorato, D.E.E., Polytechnic Institute of Brooklyn'
Ahmed Erteza, Ph.D., Carnegie Institute of Technology'
Wayne W. Grannemann, Ph.D., University of Texas, Austin
Shyam H. Gurbaxani, Ph.D., Rutgers University
Mohamad Jamshidi, Ph.D., University of Illinois
Shlomo Karni, Ph.D., University of Illinois
Ruben D. Kelly, Ph.D., Oklahoma State University'
Harold K. Knudsen, Ph.D., University of California, Berkeley
Daniel P. Petersen, D. Eng. Sc., Rensselaer Polytechnic Institute'
Harold D. Southward, Ph.D., University of Texas, Austin
Richard H. Williams, Sc.D., University of New Mexico'
**ASSOCIATE PROFESSORS:**
Joseph T. Cordaro Jr., Ph.D., University of Texas, Austin
Charles Crowley, Ph.D., University of Washington
Donald A. Neamen, Ph.D., University of New Mexico
M. K. Rajaraman, Ph.D., Texas Technical University
Kenneth C. Jungling, Ph.D., University of Illinois
**ASSISTANT PROFESSORS:**
John M. Brayer, Ph.D., Purdue University
Delores M. Etter, Ph.D., University of New Mexico
Charles F. Hawkins, Ph.D., University of Michigan
**RESEARCH PROFESSORS:**
George A. Alers, Ph.D., Iowa State University
Harold B. Knowles, Ph.D., University of California, Berkeley

**CURRICULUM**

See pp. 49 - 50.

**203. Circuit Analysis I. (3)**
Basic electrical elements and sources. Energy and power. Ohm's law and Kirchoff's laws. Resistive networks, node and loop analysis. Superposition and Thevenin's theorem. Solution of first order circuits. Sinusoidal sources and complex representations: impedance, phasors, complex power. Three phase circuits. Computer solutions.
Prerequisites: Engr 120L, Math 163; corequisite: Physcs 161. {Summer, Fall, Spring}

**204. Introduction to Electrical Engineering. (3)**
Electronic devices and models. Logic circuits. Electronic instrumentation and measurements. Basic open-loop and closed-loop systems. Electromechanical energy conversion.
Prerequisites: 203 and Physcs 161. (Normally not taken by EE majors.) {Fall}

**206L. Electrical Engineering Laboratory I. (2)**
Laboratory experiments in basic electrical measurements; D.C., A.C., circuits, and simple transients.
Prerequisite: 203. 1 lecture, 3 hrs. lab. {Fall, Spring}

**213. Circuit Analysis II. (4)**
General transient analysis of electrical circuits. Laplace transform with application to transient and steady-state analysis. Fourier series analysis. Matrices and introduction to state variables.
Prerequisites: C or better in 203, Math 316. {Summer, Fall, Spring}

**231. Digital Computation in Electrical Engineering. (2)**
Application of computer methods to electrical engineering problems; solutions of simultaneous linear equation; roots of equations; numerical differentiation and integration; elementary statistics.
Prerequisites: Engr 120L, Math 163; corequisite: 203 or permission of instructor. {Offered upon demand}

**234L. Digital Systems Laboratory. (2)**
Corequisite: 238. 1 lecture, 3 hrs. lab. {Offered upon demand}

' Registered Professional Engineers.

**238L.** [238.]**Computer Logic Design. (4)**
Binary number systems. Boolean algebra. Combinational, sequential, and register transfer logic. Arithmetic/logic unit. Memories, computer organization. Input-output. Microprocessors.
Prerequisite: Engr 120L or CS 155 or equivalent. {Summer, Fall, Spring}

****301. Electronic Applications. (3)**
Principles of basic electronic devices, circuits, and modules. Applications in sensors, measurements, instrumentation, and feedback systems. An introductory course primarily for advanced students interested in experimental techniques. Not for engineering majors. See also Med Sci 650.
Prerequisite: permission of instructor. {Offered upon demand}

****302. Clinical Instrumentation. (3)**
(Also offered as Nurs 302.) A survey of electrical and electronic instrumentation used in clinical medicine. Topics covered include basic principles of electricity, physiological effects of electrical shock, ECG, EEG, intensive care instrumentation, surgery instrumentation, and diagnostic instrumentation.
Prerequisite: Biol 237L. 2 lectures, 2 hrs. lab. {Offered upon demand}

**314.** [313.]**Signals and Communications.** [Introduction to Systems.](3)
Linear systems analysis. Signal spectra: Fourier series and integral. Applications to filtering, modulation, and sampling. Introduction to digital filtering and communication systems.
Prerequisite: C or better in 213. {Fall, Spring}

****323.** [321.]**Introductory Digital Electronics.** [Electronics I.](3)
Introduction to diodes, bipolar junction & metal oxide semiconductor transistors, analysis of the electronics of BJT and MOS logic circuits.
Prerequisite: C or better in 213. {Fall, Spring}

****324.** [322.]**Introductory Analog Electronics.** [Electronics II.](3)
Bipolar junction & field effect transistor small signal models, biasing, and frequency effects; multistage circuits differential amplifier and feedback analysis.
Prerequisite: C or better in 323. {Fall, Spring}

****325L. Electronics Laboratory I. (2)**
Pre- or corequisite: 323. 1 lecture, 3 hrs. lab. {Fall, Spring}

****326L. Electronics Laboratory II. (2)** Continuation of 325L.
Prerequisite: 325L; pre- or corequisite: 324. {Fall, Spring}

****335. Introduction to Digital Computers. (3)**
Computer organization; Boolean algebra; binary, octal, and decimal number systems; machine language instructions and programming techniques. Intended for non-EECE majors.
Prerequisite: Some programming experience. {Offered upon demand}

****336. Introduction to Digital Computer Programming. (2)**
Fundamentals of the FORTRAN computer language applied to engineering problems. Credit not allowed for both EECE 336 and Engr 120L. Intended for non-EECE majors. {Fall Spring}

****337. Introduction to Architecture and Operating Systems.** [Minicomputer Systems.](3)
The CPU; registers; memory organization; addressing; instruction sets; subroutine linkage; busses; I/O devices; assemblers; loaders; input-output routines; files multiprogramming. Programming projects will be required.
Prerequisite: 344L. {Summer, Fall, Spring}

**340. Probabilistic Methods in Electrical Engineering** [Statistical Methods in Electrical Engineering.](3)
Problems in electrical engineering involving the application of probabilities and statistical methods to noise in amplifiers and communication links, reliability quality control, tolerance assignment in design, planning of tests, calibration.
Prerequisites: C or better in 213, Math 264. {Fall, Spring}

****344L.** [444.]**Microprocessors. (4)**
Computers and Microprocessors: Architecture, programming, input/output, and applications.
Prerequisite: 238L {Fall, Spring}

**361. Fields and Waves I. (3)**
Vector analysis, Maxwell's equations, potentials, wave equations. Application to electrostatics, magnetostatics, and plane waves. Boundary value problems will be stressed in applications.
Prerequisites: C or better in 213, Physcs 161, Math 264. {Fall, Spring}

**362. Fields and Waves II. (3)**
Wave equations, applications to transmission lines, wave guides, antennas, antenna arrays and radiating systems.
Prerequisite: C or better in 361. {Fall, Spring}

**371.** [370.]**Electrical Engineering Materials and Devices.** [Physical Properties of Electrical Engineering Materials.]**(4)**
Introduction to quantum principles; insulators, conductors, and semiconductors; semiconductor devices; dielectric and magnetic properties of materials.
Prerequisite: Physcs 262. Pre- or corequisite: 361. {Fall, Spring}

**384.** [484.]**Electromechanical Energy Conversion. (2)**
Fundamentals of electro-mechanical energy conversion. Synchronous, induction, and D-C machines. Transformers.
Prerequisite: 361. {Fall, Spring}

***400. Methods in Continuous and Discrete Systems Analysis. (3)**
Matrices and linear systems; computer matrix calculation, rank, Gauss elimination, inversion, factorization. Transform methods in linear systems.
Prerequisites: senior standing, programming knowledge. {Summer, Fall}

***401. Modern Computer Architecture. (3)**
(Also offered as CS 401.) A study of the design concepts of major importance in modern computers. Topics will include data bases, microprogramming, language-directed computers, parallel processors, and pipeline computers. Emphasis will be placed on the relationship of hardware design to programming and data structuring. Students will be expected to design a small computer via microprogram.
Prerequisites: 238L, and 437 or CS 357. {Spring}

***405. Modeling in Biomedical Engineering. (3)**
The application of engineering techniques to modeling of physiological systems.
Prerequisites: Math 316 and permission of instructor. {Spring}

***406. Biomedical Instrumentation. (3)**
Theory of physiologic measurements, transducer properties and electronics, bioelectrodes, electrical safety.
Prerequisites: 203, 405, or permission of instructor. {Spring}

***412. Analysis of Nonlinear Systems. (3)**
Characteristics of nonlinear devices: two-terminal and multi-terminal; graphical and numerical analysis of resistive and dynamic nonlinear net-works.
Prerequisite: senior standing in EECE or permission of instructor. {Offered upon demand}

***415. Mini and Micro Computer Application. (3)**
Memory systems and I/O; interfacing; busses, interrupts, direct memory access; real-time systems; applications to process control and signal processing.
Prerequisite: 344L. {Spring}

***418L. Senior Laboratory. (2)**
Experiments in microwaves, opto-electronics and solid-state.
Prerequisites: 326L, 362, 314. {Fall, Spring}

***421. Electronics III. (3)**
Computer and waveforming circuits. Linear waveshaping, diode gates, large-scale transistor models, breakpoint and driving-point impedance techniques, transient response of diode and transistor circuits, limiters (clippers), clampers, arbitrary current-voltage and transfer characteristics, logic circuits, stretchers, multivibrators, and sweep circuits.
Prerequisite: 324. {Fall}

***422. Electronics IV. (3)**
Driving-point impedance methods. Extension of driving-point impedance techniques and breakpoint techniques to feedback amplifiers: operational amplifiers, regulated power supplies, special topics on field effect and unijunction transistors. Emphasis on analysis by inspection.
Prerequisite: 421. {Spring}

***424. Digital Electronic Systems. (3)**
Electronic circuits and systems applied to the processing of digital signals. The analysis and design of the functional circuits of a computational system.
Prerequisite: 324. {Spring}

***425L. Electronics Laboratory III. (2)**
Prerequisite: 326L; corequisite: 421 or 423. 1 lecture, 3 hrs. lab. {Fall}

***430. Computer Simulations of Continuous and Discrete Systems. (3)**
Simulation of systems described by differential equations, CSMP and SCEPTRE simulation languages. Methods of numerical integration. Simulation of discrete event systems, SIMSCRIPT simulation language. Monte Carlo methods. Structure of general simulation programs and languages. Simulation project.
Prerequisites: Math 316 and 340 or EECE 340. {Spring}

***431. COBOL and Decision Table Techniques. (3)**
Study of the structure and syntax of COBOL programs. Techniques of mass data storage and retrieval involving disk and tape files. Decision table techniques in logic flow and documentation.
Prerequisite: Engr 120L or equivalent programming knowledge. {Offered upon demand}

***432. Programming in PL/1. (3)**
List processing and string manipulations using the PL/1 language. Table searching and sorting techniques. System error routine definitions.
Prerequisite: Engr 120L or equivalent programming knowledge. {Offered upon demand}

***433. Digital Computer Graphics and Communications. (3)**
(Also offered as CS 433.) Introduction to graphic display devices, scopes, vector generation, character generation, and light-pen keyboard entry devices. Programming computer displays. Concepts of online operation, including telecommunications. Methods of direct graphical design input.
Prerequisites: CS 263 and some knowledge of linear algebra. Senior standing. {Fall}

***434L. Logic Design Laboratory. (2)**
Prerequisites: 238L. {Offered upon demand}

***435. Computer Engineering Design Project.** [Design of Small Software Systems.]**(3)**
Management of a large computer design project involving software and/or hardware; students will carry out a project including specification, design, implementation, testing, documenting and marketing a computer project.
Prerequisite: 337. {Fall}

***436. Advanced Engineering Programming. (3)**
Solving engineering problems using discipline-oriented special programs. Large-scale problems are solved using programs such as CSMP (Continuous System Modeling Program), SCEPTRE, CINDA.
Prerequisite: knowledge of FORTRAN. {Offered upon demand}

***437. Digital Computer Operating Systems. (3)**
Analysis of modern operating systems principles. Study of the UNIX operating system. Real-Time systems. Performance measures.
Prerequisite: 337. {Fall}

***438. Design of Computers.** [Logic Design.]**(3)**
Topics in logic design. Computer organization. Design of arithmetic unit and control unit. Memory, I/O interfacing, and Register transfer languages and logic.
Prerequisites: 238L and 323. {Fall}

***439. Introduction to Digital Filtering.** [Computer Methods in Engineering Analysis.]**(3)**
Review of spectral analysis and sampling theorem. A/D and D/A conversion. Discrete and fast Fourier transform. Recursive and nonrecursive digital filtering. Simulation of continuous systems and introduction to digital filtering design.
Prerequisite: 314. {Spring}

***440. Digital Communications and Computer Networks.** [Systems of Computers.]**(3)**
Information theory, data compression coding, error correction coding, coding for secrecy, channel capacity, common computer interfaces for communication, modems, protocols; networks, for both EE and Comp. Engr. majors.
Prerequisites: 314 and 340. {Spring}

***441. Introduction to Communication Systems. (3)**
Principal types of communication systems, including amplitude, phase, frequency and pulse modulation; double, single and vestigial sideband transmission; synchronous and asynchronous demodulation; phase-lock loops; noise; capacity of communication channels.
Prerequisite: 314. {Spring}

***443L. Communications Laboratory I. (2)**
Corequisites: 441 and permission of instructor. 1 lecture, 3 hrs. lab. {Offered upon demand}

***445L. Introduction to Control Systems. (3)**
Introduction to modeling of systems for control. Transducers and actuators. Design specification for control systems. Nyquist stability criterion. PID compensation design. Introduction to sampled-data control systems. Z-transform. Experiments with transducers and actuators, DC and AC motor control, microprocessor control, and computer-aided design. 2 hrs. lecture, 3 hrs. lab.
Prerequisites: 314, 384, 344L. {Fall, Spring}

***446. Design of Feedback Control Systems.** [Feedback Control Systems.]**(3)**
Modeling of continuous and sampled-date control systems. State-space representation. Sensitivity, stability, and optimization of control systems. Design of compensators in the frequency and time domains. Phase-plane and describing function design for non-linear systems.
Prerequisite: 445L. {Spring}

***448L. System Components Laboratory. (3)**
Properties of electrical, mechanical, and hydraulic components in control and dynamic systems. Measurement of steady-state, transient and frequency response characteristics. Synthesis of transfer functions using operational amplifiers and digital signal processors. Dynamic behavior of open- and closed-loop control systems. 2 lectures, 3 hrs. lab./week.
Prerequisite: 314. {Spring}

***461. Electromagnetic Propagation. (3)**
Application of Maxwell's equations to the solution of simple wave propagation problems; reflection and refraction of plane waves; Poyntings' vector; radiation from dipoles and loop antennas; ground and tropospheric wave propagation; the role of the ionosphere in propagation.
Prerequisite: 362. {Fall}

***462. Microwave Engineering. (3)**
Theoretical and practical considerations associated with microwave devices, including topics such as transmission lines, circuit theory of waveguiding systems, parametric amplifiers, masers and lasers.
Prerequisite: 362. {Spring}

***465L. Microwave and Optoelectronics Laboratory. (2)**
Measurements illustrating operational characteristics of microwave active and passive devices. Experiments with coherent light at I.R. and visible wavelengths. Holography.
Corequisite: 362. 1 lecture, 3 hrs. lab. {Spring}

***472. Microelectronics. (3)**
The technology and design of monolithic bipolar, monolithic MOS, thick-film hybrid and thin-film hybrid microcircuits. Computer-aided design, large-scale integration, and semiconductor memories.
Prerequisites: 323 and 371. {Spring}

***474. Optoelectronic Devices and Applications. (3)**
Topics in physical and geometric optics as applied to optoelectronic sources, amplifiers and sensors. Introduction to the theory, operation, and uses of lasers. {Offered upon demand}

***475L. Hybrid Microelectronics Laboratory. (2)**
The design and fabrication of thick-film hybrid microcircuits.
Prerequisite: 371. {Offered upon demand}

***476L. Integrated Circuits Laboratory. (2)**
The design and fabrication of monolithic bipolar and MOS integrated circuits. Prerequisite: 371; corequisite: 472. {Spring}

***477. Direct Energy Conversion. (3)**
Thermoelectric materials and devices, Seebeck-Peltier-Thompson effects, thermionic converters, optical and infrared flux concentrators, solar cells and Photovoltaic phenomena, Piezoelectric materials and devices.
Prerequisite: 371. {Offered upon demand}

***480. Electric Power Systems Analysis. (3)**
Generation and distribution of electric power; computer modeling of power distribution systems.
Prerequisites: 203 and knowledge of FORTRAN. {Fall}

***481. Electrical Transients in Power Systems. (3)**
Switching transients; 3-phase symmetrical components; recovery voltages; overload protection; parameters for transient calculations.
Prerequisite: 480 or equivalent. {Spring}

**490. Seminar in Laboratory Teaching Techniques. (1)**
Prerequisites: senior standing and permission of instructor. {Fall, Spring}

**491. Undergraduate Problems. (1-6 hrs. per semester)††**
Registration for more than 3 hours requires permission of department chairperson. {Fall, Spring}

**493. Honors Seminar. (1-3)**
A special seminar open only to honors students. Registration requires permission of department chairperson. {Fall, Spring}

**494. Honors Individual Study. (1-6)**
Open only to honors students. Registration requires permission of the department chairperson and of the supervising professor. {Fall, Spring}

***495, 496, 497. Special Topics. (1-3, 1-3, 1-3 hrs. semester)‡**
Prerequisites: senior standing and permission of instructor.

***498. Seminar. (1-3)**
Prerequisites: senior standing and permission of instructor. {Offered upon demand}

**499. Seminar. (1-3)**
Prerequisites: senior standing and permission of instructor. {Offered upon demand}

All courses following are understood to have the prerequisite of graduate standing in electrical engineering or permission of instructor.

***500. Theory of Linear Systems. (3)**
Prerequisite: 400 or equivalent. {Fall, Spring}

***501. Methods of Analysis in Electrophysics. (3)**
Prerequisite: 400 or equivalent. {Fall}

****502. Electrical Engineering Principles for Advanced Students. (3)**
Prerequisite: knowledge of differential equations and computer programming. {Offered upon demand}

***506. Methods of Operation Research I. (3)**
Prerequisite: 400. {Fall 1981 and alternate years}

***507. Methods of Operation Research II. (3)**
Prerequisite: 506 or equivalent or permission of instructor. {Spring 1982 and alternate years}

***508. Bioelectric Phenomena. (3)**
Prerequisite: 314. {Offered upon demand}

***512. Modern Network Theory. (3)**
Prerequisite: permission of instructor. {Spring}

***513. Modern Filter Theory and Design. (3)**
Prerequisite: 512 or permission of instructor. {Fall 1981 and alternate years}

***515. Graph Theory and Applications. (3)**
Prerequisites: 400 or permission of instructor, programming knowledge. {Offered upon demand}

***516. Video Pattern Recognition. (3)**
Prerequisites: 340 and 536 or Math 317. {Spring 1982 and alternate years}

***520. VLSI Design. (3)**
Prerequisite: 323. {Spring}

***523.** [423.]**Analog Electronics.** [Analog Electronic Systems.]**(3)**
Prerequisite: 324. {Fall}

***526L.** [426L.]**Electronics Design Laboratory.** [Electronics Laboratory IV.]**(3)**
Prerequisite: 324 or 523. {Spring}

***530. Fault Detection and Tolerance. (3)**
Prerequisite: 238L. {Fall 1981 and alternate years}

***531. Error-Correcting Codes. (3)**
Prerequisites: 238L and 536. {Fall 1981 and alternate years}

***532. Theory of Automata. (3)**
Prerequisites: 238L and 536 or Math 317. {Fall}

***533. Image Processing by Digital Computer. (3)**
Prerequisite: knowledge of Fourier analysis, linear system theory, and digital computers. {Spring 1981 and alternate years}

***534. Symbol Manipulation and Heuristic Programming. (3)**
Prerequisite: 340. {Offered upon demand}

***535. Principles of Threshold Logic. (3)**
Prerequisite: 238L. {Offered upon demand}

***536. Algebraic Foundations of Computer Engineering. (3)**
Prerequisite: 238L. {Fall}

***537. Introduction to Language Theory and Compiler Design.** [Formal Languages.]**(3)**
Prerequisite: 536. {Spring 1981 and alternate years}

***538. Design of Digital Systems. (3)**
Prerequisite: 438. {Spring}

***539. Digital Signal Processing I. (3)**
Prerequisites: 400 and 439. {Fall}

***541. Random Signal Processing. (3)**
Prerequisites: 340, 400 or equivalent. {Fall}

***542. Statistical Communication Theory. (3)**
Prerequisite: 541 or equivalent. {Spring 1982 and alternate years}

***543. Digital Communication and Data Transmission. (3)**
Prerequisite: 541 or equivalent. {Offered upon demand}

***545. Vehicle Navigation and Control. (3)**
Prerequisites: 446 and 500. {Offered upon demand}

***546. Automatic Control Theory. (3)**
Prerequisites: 446 and 500. {Spring}

***547. Neural Networks. (3)**
Prerequisites: 314 and graduate standing in mathematics, physics, physiology, or engineering. {Offered upon demand}

***548. System Modeling. (3)**
Prerequisite: 340, 500 or permission of instructor. {Spring 1982 and alternate years}

***549. Special Topics in Software Engineering. (3)**
Consult department graduate office for current offering and prerequisites. May be repeated. {Spring}

***551-552. Problems. (1-3, 1-3 semester)††**
{Offered upon demand}

***561. Applied Field Theory. (3)**
Prerequisite: 362. {Fall}

***562. Electromagnetic Propagation and Scattering. (3)**
Prerequisites: 362, 501. {Spring}

***570. Quantum Theory of Solids I.(3)**
Prerequisite: 371 or Physcs 330. {Offered upon demand}

***571. Quantum Theory of Solids II. (3)**
Prerequisite: 570. {Offered upon demand}

***572. Semiconductor Properties. (3)**
Prerequisite: 371, recommended pre- or corequisite: 471. {Fall}

***573. Magnetic and Dielectric Properties of Solids. (3)**
Prerequisite: 572. {Offered upon demand}

***574L. Processing Techniques in Solid State Technology. (3)**
Prerequisite: 371. {Offered upon demand}

***575. Theory of Solid State Devices. (3)**
Prerequisite: 371. {Spring}

***590. Graduate Colloquium. (1)**
Prerequisite: permission of EECE adviser. {Fall, Spring}

***595, 596, 597. Special Topics. (1-3, 1-3, 1-3 hrs. semester)‡**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***613. Special Topics in Networks and Systems. (3)**
Prerequisite: 500. {Spring}

***614. Modern Filters. (3)**
Prerequisite: 513. {Offered upon demand}

***636. Decomposition Theory. (3)**
Prerequisite: 536 or permission of instructor. {Spring 1982 and alternate years}

***639. Digital Signal Processing II. (3)**
Prerequisite: 539. {Spring 1981 and alternate years}

***641. Information Theory and Coding. (3)**
Prerequisite: 541. {Offered upon demand}

***643. Special Topics in Communication Theory. (3)**
{Offered upon demand}

***646. Optimal Processes. (3)**
Prerequisite: 546. {Offered upon demand}

***647. Introduction to Artificial Intelligence. (3)**
Prerequisites: graduate standing in mathematics, physics, physiology, or engineering and permission of instructor. {Offered upon demand}

***649. Special Topics in Control Theory. (3)**
Prerequisite: 546. {Offered upon demand}

***651-652. Problems. (1-3, 1-3 hrs. semester)††**
{Offered upon demand}

***661. Antennas. (3)**
Prerequisite: 562. {Offered upon demand}

***662. Microwave Techniques. (3)**
Prerequisite: 562. {Offered upon demand}

***663. Magnetohydrodynamics. (3)**
Prerequisite: 562. {Offered upon demand}

***664. Advanced Electromagnetic Propagation. (3)**
Prerequisite: 562. {Offered upon demand}

***665. Special Topics in Electromagnetic Fields. (3)‡**
Advanced topics in electromagnetic fields and waves. Consult departmental graduate office for current offerings. {Offered upon demand}

***669. Seminar in Electromagnetic Waves. (3)**
{Offered upon demand}

***671. Charge Transport in Solids. (3)**
Prerequisite: 571. {Offered upon demand}

***672. Quantum Electronics. (3)**
Prerequisite: 570 or permission of instructor. {Offered upon demand}

***673. Radiation Effects in Solid State Devices. (3)**
Prerequisite: 572 or permission of instructor. {Offered upon demand}

***675. Special Topics in Solid State. (3)‡**
Advanced topics in solid state. Consult departmental graduate office for current offerings. {Spring}

***679. Seminar in Solid State Theory. (3)**
{Offered upon demand}

***695, 696, 697, 698. Seminar. (3, 3, 3, 3)**
{Offered upon demand}

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# ENGINEERING, MECHANICAL

Alan D. Lebeck, Chairperson
ME 202A 277-2761

**PROFESSORS:**

Bohumil Albrecht, Ph.D., Columbia University
William E. Baker, Ph.D., University of Texas
David C. Chou, Ph.D., Yale University
William A. Gross, Ph.D., University of California (Berkeley)
Arthur V. Houghton, Ph.D., Purdue University
Frederick D. Ju, Ph.D., University of Illinois
Alan O. Lebeck, Ph.D., University of Illinois
Charles G. Richards, Ph.D., University of Michigan
Maurice W. Wildin, Ph.D., Purdue University

**ASSISTANT PROFESSORS:**
Frank W. Chambers, Ph.D., Purdue University

Gregory P. Starr, Ph.D., Stanford University
Jaroslav Ramer, Ph.D., University of California (Santa Barbara)

**PROFESSOR EMERITUS:**
Victor J. Skoglund, D. Eng., Yale University

CURRICULUM

See pp. 50-51.

**201L. Introduction to Mechanical Engineering. (1)**
Lectures, demonstrations and simple experiments on mechanical systems to introduce the student to concepts of mechanical engineering.
Prerequisite: Math 162. Corequisites: Engr 120, 122. 3 hrs. lab. {Fall, Spring}.

**206L. Dynamics. (3)**
Principles of dynamics. Kinematics and kinetics of particles, systems of particles, and rigid bodies.
Prerequisite: CE 202; corequisite: Math 264. 2 lectures, 3 hrs. lab. {Summer, Fall, Spring}

**273. Engineering Shop Practice. (1)**
Principles of and practice with hand and machine tools of the mechanical engineering metal shop. Measurements; drilling; welding; sawing; benchwork; grinding; and lathe, milling machine, and sheet metal operations are covered. Course designed to meet the needs of engineering students for future course projects.
Prerequisite: sophomore standing. 3 hrs. lab. {Offered upon demand}

**300. Mechanical Engineering Analysis. (3)**
Principles and applications of analysis of engineering systems.
Prerequisites: Math 265, junior standing in engineering. {Offered upon demand}

**301. Thermodynamics. (3)**
(Also offered as ChE 301.) Principles of thermodynamics. First and second laws, properties and equations of state.
Prerequisites: Chem 121L, Physics 161, Math 265 or equivalent. {Summer, Fall, Spring}

****302. Thermodynamics II.** [Thermochemistry and Gas Dynamics.]**(3)**
Thermodynamic relationships of reactions, mixtures and solutions. Requirements for equilibrium. Thermodynamics of flow through turbomachinery.
Prerequisite: 301. {Fall, Spring}

**314L. Dynamics of Mechanical Systems. (3)**
Kinematic and kinetic analysis of machine elements and systems. Balancing of machine elements.
Prerequisite: 206L. 2 lectures, 3 hrs. lab. {Fall, Spring upon demand}

****317. Fluid Mechanics. (3)**
Basic concepts and principles of fluids, including continuity, momentum, and energy principles. Applications to incompressible, laminar, or turbulent flows over flat plates, inside of tubes, and around solid objects.
Prerequisite: 206L; corequisite: 301. {Fall, Spring}

**318L. Mechanical Engineering Laboratory I. (2)**
Introduction to experimental methods in engineering with experiments to relate basic physical concepts to mass, length, time, and temperature, and to utilize commonly used measuring methods in mechanical engineering.
Corequisites: 301, 317, 357, CE 302; prerequisite: EECE 203. 6 hrs. lab. {Fall, Spring}

***320 Heat Transfer. (3)**
Principles and engineering applications of heat transfer by conduction, radiation, and free and forced convection.
Prerequisites: 301, 317, Math 316. {Fall, Spring}

***341. Air Pollution Control. (3)**
(Also offered as ChE 341.) Technical analysis of problems of air pollution control presented. Relationships between sources and effects of air pollution studied. Methods for minimizing hazards of air pollution considered from viewpoints of industrial manager, legislator, engineer, control official, and the public. Information presented applied to study of local problems. Practical projects in pollution control conducted.
Prerequisites: 301, Math 264, Physics 161, Chem 121L, or equivalents, and junior standing. {Fall or upon demand}

**350. Engineering Economy. (3)**
(Also offered as CE 350.) A study of methods and techniques used in determining comparative financial desirability of engineering alternatives. Includes time value of money (interest), depreciation methods, and modern techniques in analysis of management decisions.
Prerequisite: junior standing. {Summer, Fall, Spring}

**351L. Mechanical Engineering Laboratory II. (2)**
Experimental and analytical study of simple systems illustrating basic physical principles. Comparison of results of measurements with results of explicit or numerical solutions. Evaluation of results presented in laboratory reports.
Prerequisites: 302, 318L, 320, 370 or permission of instructor. 6 hrs. lab. {Fall, Spring}

**352L. Mechanical Engineering Laboratory III. (2)**
Experimental engineering projects involving complex systems. Planning, fabrication, performance, analysis, and reporting of an original experiment.
Prerequisite: 351L. 6 hrs. lab. {Offered upon demand}

**355. Engineering Statistics and Quality Control. (3)**
Statistical methods applied to quality control problems; significance tests; correlation analysis; sequential sampling; analysis of variance; design of experiments.
Prerequisite: senior standing. {Offered upon demand}

**356. Industrial Engineering. (3)**
A survey of industrial engineering principles, methods, and techniques used to assist management in making sound operational decisions.
Prerequisite: senior standing or permission of instructor. {Fall}

**357. Introduction to Mechanical Vibrations. (3)**
Free and forced vibrations of one and two degrees of freedom systems for both steady state and transient forcing. Also vibrations of selected continuous systems and balancing.
Prerequisites: 206L, Math 316. {Fall, Spring}

**358L. Design of Solid Systems. (3)**
Mechanics of materials applied to the design of machine elements such as bolts, springs, shafts, and gears. Methods of design for fatigue and combined stress are studied. Students design a simple machine.
Prerequisite: CE 302. 2 lectures, 3 hrs. lab. {Fall, Spring}

**359L. Mechanical Engineering Design. (3)**
The design process is studied and applied. The student is required to design a component or simple system. Projects may involve the thermo-fluids or solids area or both. The student is required to consider all relevant aspects of the problem, including the technical solution, function, cost, producability, applicable standards, materials, and safety.
Corequisites: 358, 363.
Prerequisites: 357, 314. 1 lecture, 6 hrs. lab. {Fall, Spring}

**363L. Analysis of Fluid Systems. (3)**
Engineering analysis of fluid systems based on the principles of fluid mechanics, heat transfer, and thermodynamics.
Prerequisites: 302, 317, 320, or permission of instructor. 2 lectures, 3 hrs. lab. {Fall, Spring}.

****365. Heating, Ventilating, and Air Conditioning Systems. (3)**
The methods of analysis used in the design of systems for the conditioning and control of ambient environments for people, processes, equipment, or foods.
Prerequisite: 320. {Spring}

**367. Analysis for Building Energy Systems. (3)**
(Also offered as Arch 351.) Lectures on analysis for building energy systems such as thermodynamics, heat transfer, solar, and conventional energy use.
Prerequisites: one semester of calculus, physics. {Offered upon demand}

**370. Engineering Materials Science. (3)**
(Also offered as CE 370.) The structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials; metals, ceramics, and polymers.
Corequisite: CE 302. {Summer, Fall, Spring}

**373L. Manufacturing Processes. (3)**
Introduction to mechanical and thermal processes used to form and join metallic and nonmetallic materials. Discussions of these processes are supplemented with demonstrations and field trips.
Prerequisite: junior standing in engineering or equivalent. 2 lectures, 3 hrs. lab. {Spring or upon demand}

****382. Energy Utilization and Conversion. (3)**
Energy utilization and conversion for heating, cooling, and power generation; energy supply and demand, economics, and conversion efficiency for fossil, nuclear, hydro, solar, and wind energies; comparison of heat engines, electrochemical, fuel cells and batteries, solar cells, thermoelectric, thermionic, and magneto hydrodynamic conversion systems.
Prerequisite: 301. {Spring}

***401. Advanced Mechanics of Materials. (3)**
(Also offered as CE 401.) State of stress and strain at a point, stress-strain relationships; topics in beam theory such as unsymmetrical bending, curved beams, and elastic foundations; torsion of noncircular cross-sections; energy principles.
Prerequisites: CE 302 and senior standing. {Spring}

***402. Tensor Analysis and Continuum Mechanics. (3)**
(Also offered as CE 402.) Tensor analysis in Euclidean space, kinematics of continua, the stress tensor, linear constitutive equations for elastic solids, compressible viscous fluids, and viscoelastic media.
Prerequisites: CE 302, Math 265. {Offered upon demand}

***414. Intermediate Dynamics. (3)**
Review of Newtonian mechanics, dynamic analysis in non-Newtonian reference frame, Lagrangian equation of motion, introduction to dynamic systems such as orbital mechanics, gyrodynamics, and linear vibratory systems including multi-degree of freedom systems and excitation-response analysis.
Prerequisites: 206L, Math 265 or equivalent, and senior standing or permission of instructor. {Offered upon demand}

***425. Application of Solar Energy to Engineering Systems. (3)**
Engineering analysis of applications of solar energy, including integration of solar systems with conventional sources of energy. System modeling and performance measurements on operating systems.
Prerequisites: 301, and 320. {Spring}

***430. Intermediate Fluid Mechanics. (3)**
Derivation of the Navier-Stokes equations. Introduction to two and three dimensional potential flow theory, viscous flow theory, including the development of Prandtl's boundary-layer equations and the momentum integral approach, and compressible flow theory, including thermodynamics of shock waves, friction and heat addition.
Prerequisites: 301, 317. {Spring}

**451-452. Undergraduate Problems. (1-3, 1-3 hrs. per semester, to a maximum of 6)**
A project of an original nature carried out under faculty supervision. A student may earn 451 or 452 credit for an industrial project by prearranging approval of the project by a faculty adviser and the department chairperson.
Prerequisites: senior standing and permission of instructor. {Fall, Spring}

***455. Engineering Project Management. (3)**
Estimating, proposing, planning, scheduling, quality and cost control, and reporting of an engineering project. Particularly oriented to projects carried out by an engineering group within a larger organization or company. Case studies of actual projects.
Prerequisite: senior standing. {Offered upon demand}

****461-462. Special Topics. (1-3, 1-3 hrs. per semester)**
Formal course work on special topics of current interest.
Prerequisites: senior standing and permission of instructor. {Offered upon demand}

***465. Tribology. (3)**
Surface statistics, theories of friction and wear, sliding and rolling element bearings, hydrodynamic and hydrostatic bearing.
Prerequisite: senior standing in ME. {Fall, or upon demand}

***480. Analysis and Design of Mechanical Control Systems. (3)**
System dynamics and modeling; transfer functions; concept of feedback and system stability; transient and steady-state response; control system analysis and design using root locus and frequency response methods.
Prerequisite: senior standing or permission of instructor. {Fall}

***481. Digital Control of Mechanical Systems. (3)**
Introduction to microprocessor organization, application and machine language programming. Emphasis is on practice. Basic digital control principles will be studied and control algorithms implemented using a microcomputer.
Prerequisite: 480. {Spring}

***483. Power Generating Systems. (3)**
Analysis and design of conventional systems for converting energy into useful work, including experimental performance, control and economics. Systems covered include various vapor power cycles, power plant equipment, and internal and external gas combustion cycles such as Brayton, Diesel, and others. {Fall}

***490. Methods Engineering. (3)**
Introduction to problems of work methods and work measurements associated with increasing productivity and decreasing the cost of producing goods and services. Methods used in developing procedures for effective utilization of effort in industrial operations. Analytical study of manufacturing systems.
Prerequisites: 355 and senior standing. {Offered upon demand}

***491-492. Seminar. (1, 1)**
A series of lectures by professors, students, and/or professional engineers on topics of continuing and current interest.
Prerequisite: senior standing. {Fall, Spring}

***500. Numerical Techniques in Mechanical Engineering. (3)**
Prerequisite: at least one semester of 400- or 500-level course work in solid or fluid mechanics. {Fall}

***502. Mechanical Engineering Analysis. (3)**
Prerequisite: Math 316 or equivalent; corequisite: ME 530 or 540. {Spring}

***507. Similitude in Engineering. (3)**
Prerequisites: 522 or 530 or 540. {Offered upon demand}

***512. Tensor Analysis in Mechanics. (3)**
Prerequisite: 530 or 540 or equivalent. {Offered upon demand}

***514. Variational Mechanics. (3)**
Prerequisite: at least one semester of graduate study or permission of instructor. {Spring or upon demand}

***518L. Principles of Measurement in Mechanical Engineering. (3)**
Prerequisites: 301, 317, 318, 357. 2 lectures, 3 hrs. lab. {Fall}

***520. Advanced Thermodynamics I. (3)**
Prerequisites: 301, Math 316. {Fall}

***522. Heat Conduction. (3)**
Prerequisites: 320, Math 312, or permission of instructor; corequisite: 530. {Spring}

***523. Random Vibrations. (3)**
(Also offered as CE 523.)
Prerequisite: CE 520 or permission of instructor. {Offered upon demand}

***524. Radiant Heat Transfer. (3)**
Prerequisite: 320. {Offered upon demand}

***525. Solar Energy System Design and Analysis. (3)**
Prerequisites: 425, 500, and 522. {Fall or upon demand}

***530. Theoretical Fluid Mechanics I.** [Applied Fluid Mechanics I] **(3)**
Prerequisites: 430, 522. {Fall}

***532. Advanced Gas Dynamics. (3)**
Prerequisites: 522, 530. {Offered upon demand}

***534. Boundary Layers. (3)**
Prerequisite: 530. {Offered upon demand}

***540. Elasticity I. (3)**
Prerequisite: Math 316. {Fall}

***541. Elasticity II. (3)**
Prerequisite: 540; corequisite: Math 313. {Offered upon demand}

***542. Theory of Shells. (3)**
(Also offered as CE 519.)
Prerequisites: 402, Math 312. {Offered upon demand}

***543. Analysis of Thermal Stresses. (3)**
Prerequisite: 540. {Spring or upon demand}

***548L. Experimental Stress Analysis. (3)**
Prerequisite: 518L. {Spring}

***551-552. Problems. (1-3, 1-3 hrs. semester)**
Prerequisite: 6 hrs of 500-level ME courses. {Fall, Spring}

***559. Design Project. (3)‡‡**
Prerequisite: permission of instructor. {Offered upon demand}

***561-562. Special Topics. (1-3, 1-3 hrs. per semester)**
{Offered upon demand}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***620. Physical Gas Dynamics I.** [Kinetic Theory and Statistical Mechanics.]**(3)**
Prerequisites: 520 and 532. {Offered upon demand}

***622. Convection. (3)**
Prerequisites: 530, 532. {Offered upon demand}

***630. Physical Gas Dynamics II.** [Theoretical Fluid Mechanics.]**(3)**
Prerequisites: 522, 530. {Offered upon demand}

***632. Hypersonic Flow of Ideal Gases. (3)**
Prerequisites: 530, 532 or permission of instructor. {Offered upon demand}

***633. Hypersonic Flow of Real Gases. (3)**
Prerequisites: 530, 532 or permission of instructor. {Offered upon demand}

***640. Nonlinear Theory of Elasticity. (3)**
Prerequisite: 541. {Offered upon demand}

***642. Mechanics of Inelastic Continuum. (3)**
Prerequisite: 430 or 540 or equivalent. {Offered upon demand}

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# ENGLISH

Hamlin L. Hill, Chairperson
Humanities Bldg 229, 277-6347

**PROFESSORS:**
Robert O. Evans, Ph.D., University of Florida
Robert E. Fleming, Ph.D., University of Illinois
Hamlin Hill, Ph.D., University of Chicago
Leon Howard, Ph.D., John Hopkins University
David C. McPherson, Ph.D., University of Texas
Hugh H. Witemeyer, Ph.D., Princeton University

**ASSOCIATE PROFESSORS:**

Rudolfo A. Anaya, M.A., University of New Mexico
James F. Barbour, Ph.D., University of California, Los Angeles
Paul B. Davis, Ph.D., University of Wisconsin
Morris E. Eaves, Ph.D., Tulane University
Michael R. Fischer, Ph.D., Northwestern University
Gene Frumkin, B.A., University of California, Los Angeles
Barry J. Gaines, Ph.D., University of Wisconsin
Patrick J. Gallacher, Ph.D., University of Illinois
David M. Johnson, Ph.D., University of Connecticut
David R. Jones, Ph.D., Princeton University
Jane B. Kopp, Ph.D., University of California, Berkeley
Thomas M. Mayer, Professional Writer
Ivan P. Melada, Ph.D., University of California, Berkeley
Roy G. Pickett, Ph.D., University of Iowa
Mary J. Power, Ph.D., University of Wisconsin
David A. Remley, Ph.D., Indiana University
Patricia C. Smith, Ph.D., Yale University
James L. Thorson, Ph.D., Cornell University
Marcia Tillotson, Ph.D., University of Chicago
Frederick B. Warner, Ph.D., University of Illinois
Mary Martha Weigle, Ph.D. University of Pennsylvania
Mary Bess Whidden, Ph.D., University of Texas
Joseph B. Zavadil, Ph.D., Stanford University

**ASSISTANT PROFESSORS:**

Lee Bartlett, Ph.D., University of California, Davis
Lynn D. Beene, Ph.D., University of Kansas
William C. Dowling, Ph.D., Harvard University
David Dunaway, Ph.D., University of California, Berkeley
Rick Eden, Ph.D., University of California, Los Angeles
Cheryl H. Fresch, Ph.D., Cornell University
Michael J. Hogan, Ph.D., Kansas University
Antonio Marquez, Ph.D., University of New Mexico
Peter C. Page, Ph.D., Indiana University
Peter L. White, Ph.D., Pennsylvania State University

**LECTURERS:**

Sharon R. Barba, Ph.D., University of New Mexico
Harvena Richter, Ph.D., New York University
Ronald T. Swigger, Ph.D., Indiana University

**PROFESSOR EMERITI:**

Edith Buchanan, Ph.D., Duke University
Ernest W. Baughman, Ph.D., Indiana University
Willis D. Jacobs, Ph.D., University of North Carolina
Joseph Kuntz, Ph.D., University of Denver
Harold W. Lavender, Ph.D., University of New Mexico
Dorothy M. Logan, M.A., University of New Mexico
Thomas M. Pearce, Ph.D., University of Pittsburgh
Katherine G. Simons, M.A., Columbia University
Ernest W. Tedlock, Jr., Ph.D., University of Southern Californ
Hoyt Trowbridge, Ph.D., University of Wisconsin
Dudley Wynn, Ph.D., New York University

**ENGLISH MAJORS**

The English major requires 33 hours beyond 102. Th courses should be distributed as follows:

**The Pre-Graduate Concentration (33 hour**
202—The Study of Literature, 294—Survey of Earli English Literature; 295—Survey of Later English L erature; 296—American Literature or 275—World L erature through the Renaissance or 276—Wor Literature since the Renaissance; 351—Chauce 354—Milton; 352—Shakespeare or 353—Shak speare; one of the following: 460—Colonial and Re American Literature, 461—American Romanticisr 462—American Realism; one of the following: 410 Literary Criticim, 415—Old English, 440—Introductic to Linguistics, 445—History of the English Languag 452—The Middle Ages, 453—English Renaissanc 454—Seventeenth Century English Literature, 455 Restoration and 18th Century Literature, 456—Engi Romanticism, 457—Victorian Literature, 458—Mo ern British Literature, 459—Irish Literature, 485-486 The English Novel; six additional hours at the 300 400 level. Recommended electives for English m jors: English 463, 470, 474, 481; English 304—Bib as Literature; 305—Mythology; 306—Oral and Folk

**Liberal Arts Concentration (33 hours)**
English 202, 294 and 295; six hours from the followi courses: 351, 352, 353, 354; two of the three autho are to be covered. Nine hours at the 400 level. Ni additional hours, with no more than three at the 2 level.

**Teaching English Concentration (33 hours in En lish, 21 hours in Education)**
English 202; 220; 294, 295, and 296; 352 or 353; 42 441. Nine additional hours in English from cours numbered 351-354 or 400 and above. Especially re ommended are English 400, 445, and 460-463. Ed cation courses needed for secondary teach certification in New Mexico: Education Foundatio 290; Junior Block, consisting of Secondary Educati 361, Education Foundation 303 and 310; either Se ondary Education 461 or 463 (student teaching); Se ondary Education 438.

**English Major, Pre-Law Concentration (30 hours**
202; 220; Nine hours from the following: 294, 2 296, 275, 276; three hours from: 352, 353; three hou from 460, 461, 462, 463; English 410; six additior hours at the 300 or 400 level; recommended are En lish 320 (Legal Writing), and 315 (Law and Literatu **Outside the department,** the following cours should be taken: a course in public speaking, Philc ophy 380 (Philosophy of Law and Morals), Philosop 156 (Logic), History 378, 379 (Constitutional Hiso of the United States).

**English Major, Pre-Business Concentration ( hours)**
202; English 220 or 219; nine hours from: 294, 2 296, 275, 276; three hours from 352, 353; three hou from 360, 461, 462; a modern literature course fr the following list: 458, 459, 463, 470; six additio hours at the 300 or 400 level. Recommended are 3 (Business Writing) and 315 (Business in Literature.

**Creative Writing Major (33 hours)**

27 hours in English and six in other creative are such as art, music, theatre arts; English 202; thr hours from: 294, 295, or 296; twelve hours from 2 222, 321, 322, 421, 422; six hours in literatu courses numbered 300 or above; English 423 (thes

**English Philosophy Major**
See current catalog.)

**DEPARTMENTAL HONORS**

Students who seek honors in English should apply at the departmental office. Admission to honors requires a minimum grade-point average of 3.5 in English courses and an overall 3.2. Honors candidates must register for 497 and complete an Honors Thesis in their senior year.

**MINOR STUDY**

An English minor requires 18 hours of English courses numbered above 102. At least 12 of these hours must be upper-division credits. Every minor program must include one survey course (294, 295, 296), one course in Shakespeare (352, 353) and at least one 400-level course from the following list: 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 470, 485, 486.

**DISTRIBUTED MINOR**

An English major may offer an American studies minor as well as a minor in a single department. For requirements see "American Studies".

**PREREQUISITES**

A student must have credit for Engl 101 or its equivalent before registering for 102, 221, or 222 and credit for 102 before registering for 201, 202, 219, 220 or any course numbered 252-296.
At least one course in literature at the 200 level is further required for admission to a literature course numbered above 300. An English major should meet this last prerequisite by taking Engish 202. Non-majors should normally meet the prerequisite by taking English 201.
A few courses have special prerequisites listed after the course descriptions.

**ENGLISH AS A SECOND LANGUAGE OR COLLEGE ENGLISH AS A SECOND DIALECT**

All classes in English as a Second Language or College English as a Second Dialect are offered in the *English Tutorial Program*, Marron 214. For class level placement and time scheduling students must apply in person. Classes serve international students, recent immigrants who have attended American high schools, Native American students, Hispanic students, black students, and any others whose spoken and written English differs substantially from standard college English. These English classes are offered for college credit as noted below. Non-credit, full-time English classes are offered in the Intensive English Institute.

**UNDERGRADUATE COURSES**

**Expository Writing**

**100. Writing Standard English. (3)**
Intensive study of grammar, syntax, punctuation, and usage. Concentrated practice in writing paragraphs. For students who score 18 or below in English on the ACT. Does not satisfy A&S group requirements. {Fall, Spring}

**101. Writing with Readings in Exposition. (3)**
Expository writing and reading. {Summer, Fall, Spring}

**102. Analytic Writing.** [Writing with Readings in Literature.](3)
Prerequisite: 101 or its equivalent. {Summer, Fall, Spring}

**110. Introduction to the Film. (3)**
(See Film 210.)

**198. Library Research and Term Paper Writing. (3)**
A thorough introduction to the materials available in the library and how to use them in developing carefully researched and formally prepared papers.
Prerequisite: 102.

**199. Technical Writing. (3)**
Practice in the writing and editing of technical, engineering and scientific reports and articles.
Prerequisite: 102. {Fall, Spring}

**200. Expository Writing. (3)**
An intermediate course with emphasis on rhetorical types, structure, and style.
Prerequisite: 102 or its equivalent. {Fall, Spring}

**289. Workshop in Literature or Writing. (1-3)‡**
Various topics in Literature, Grammar, Advanced Writing, Stylistics, or Rhetoric. Intensive study Topics vary.

**320. Advanced Expository Writing. (3)**

Prerequisite: 219 or 220. {Spring}

**323. Writing for Graduate Students. (3)**
Staff Instruction and practice in expository writing for graduate students preparing to write term papers and theses. Intended for **non-English majors.**

***498. Advanced Workshop in Literature or Writing. (1-3 per semester, to a maximum of 6)‡**
Various Topics in Literature, Grammar, Writing, Stylistics, or Rhetoric. Intensive study. Topics vary.

**II. Creative Writing**

**221. Creative Writing: Prose Fiction. (3)**
A $7.00 workshop fee is required.
Prerequisite: 101 or its equivalent. {Fall, Spring}

**222. Creative Writing: Poetry. (3)**
A $7.00 workshop fee is required.
Prerequisite: 101 or its equivalent. {Fall, Spring}

**321. Creative Writing: Short Fiction, Novel. (3)‡‡**
Intermediate course with generally equal emphasis on writing and reading. A $7.00 workshop fee is required.
Prerequisite: 221 or permission of instructor.

**322. Creative Writing: Reading and Writing of Poetry. (3)‡‡**
Intermediate course with generally equal emphasis on writing and reading. A $7.00 workshop fee is required.
Prerequisite: 222 or permission of instructor.

***421. Creative Writing: Workshop in Prose Fiction. (3)‡‡**
Advanced workshop devoted primarily to student writing. A $7.00 workshop fee is required.
Prerequisites: 221, 321, or permission of instructor.

***422. Creative Writing: Workshop in Poetry. (3)‡‡**
Advanced workshop devoted primarily to student writing. A $7.00 workshop fee is required.
Prerequisites: 222, 322, or permission of instructor.

**423. Creative Writing Thesis. (3)**
Open only to senior majors in creative writing. {Fall, Spring}

**III. Literature and Language**

**201. The Study of Literature. (3)**
An introduction to the study and appreciation of literature **for non-English majors.**
Shows how understanding writer's techniques increases the enjoyment of their works; relates these techniques to literary conventions; teaches recognition, analysis, discussion of important themes.

**202.** [290.]**The Analysis of Literature.** [The Study of Literature.](3)
First course required of all English majors. Concentrates on methods of literary analysis and critical writing.
Prerequisite: 102 or its equivalent. {Fall, Spring}

**206. Topics in Popular Literature. (3)**
Reading and analysis of popular literary forms such as the spy novel, the detective novel, science fiction, best-sellers, and fantasy.

**211. Topics in Literature. (3)**
Surveys a specific type or area of literature; e.g., the American novel, the satiric novel, southern fiction, the western novel, American poetry, feminist literature, Chicano literature, Native American literature, Afro-American literature. Primarily for non-majors.
Prerequisite: 201.

**240. Traditional Grammar. (3)**
A study of the basic analysis of English sentences offered by traditional grammar. The course presents terminology and methods for identifying parts of speech, functional units of sentences, and basic sentence patterns.

**252. Introduction to Shakespeare. (3)**
An introduction to Shakespeare's works, in which one or two plays of each sort — tragedies, histories, comedies — will be studied.
Prerequisite: 201.

**270. An Introduction to Modern Literature. (3)**
An introduction to American and European literature of the 20th century, concentrating on such major authors as Eliot, Faulkner, Fitzgerald, Yeats, Joyce, Ibsen, Camus, and Chekhov.

**275.** [375.]**World Literature Through the Renaissance. (3)**

Masterpieces of European and Asiatic literature including the Bible.

**276.** [376.]**World Literature Since the Renaissance. (3)**
Masterpieces of European literature.

**277. Great Books. (3)**
Discussion of the University of Chicago Great Books and their values to modern readers. Designed for non-majors.

**285. American Life and Thought. (3)**
(See Am St 285.)

**286. Introduction to the Novel. (3)**
Several classic novels—books like ***Pride and Prejudice, Huckleberry Finn,* and *Madame Bovary*** — provide a basis for studying the characteristics of the novel as a literary form.
Prerequisite: 201.

**287. Introduction to the Short Story. (3)**
The development of the modern short story from its beginnings in the nineteenth century to the present. Technique and theme will be studied in representative stories by American and European writers.
Prerequisite: 201.

**294. *Survey of Earlier* English Literature. (3)**
From Old English to 1798. A study of the principal literary and intellectual movements, and selected writers and literary works from Beowulf through Johnson.

**295. Survey of Later English Literature. (3)**
From 1798 to present. Study of principal literary and intellectual movements, and selected writers and literary works.

**296. American Literature. (3)**
A general survey to the present. Especially recommended for English majors.

**301-302. Interdepartmental Studies in the Culture of the U.S. (1-3, 1-3)**
(See Am St 301-302.)

***303. English Phonetics. (3)**
(See Sp Com 303.)

**304. The Bible as Literature. (3)** Staff
Literary aspects of the Old and New Testaments. Examines the literary forms within the Bible: epic, parable, pastoral, allegory, proverb, etc. Stresses the importance of the Bible as a source for English and American literature.

**305. Mythology (3)**
An introduction to the major traditions of European and American mythology. Basic themes and motifs; the quest, creation, birth, marriage, heroes, heroines and death. Provide background for the study of later literature.

**306. Oral and Folk Literature. (3)**
Historical and comparative study of tales, legends, songs, proverbs, riddles, humor, and popular beliefs in American culture and in other cultures such as those of the North American Indian, the African, and the European peasant.

**308. The Jewish Experience in American Literature and Culture. (3)**
(Also offered as Am St 308.) An inter-disciplinary survey of the cultural and historic relationship between Jews and American culture and character as a whole that emphasizes the works of Jewish writers and thinkers.

**315. Interdisciplinary Approaches to Literature. (3)**
Combines the study of literature with the study of outside materials from history, sociology, or other disciplines. Examples include Business in Literature, the Literature of Baseball, Non-Fiction Novels, Religion and Literature, Law and Literature, Literature of the Depression.

***334. Spanish American Literature in Translation. (3)**
(See Spanish 334.)

***335. French Literature in Translation. (3)**
(See French 335.)

***336. German Literature in Translation. (3)**
(See German 336.)

***337. Spanish Literature in Translation. (3)**
(See Spanish 337.)

***338. Russian Literature in Translation. (3)**
(See Russian 338.)

***341. Greek Mythology. (3)**
(See Greek 341.)

***344. Topics in Latin Literature in Translation. (3)‡**
(See Latin 344.)

***345. Topics in Greek Literature in Translation. (3)‡**
(See Greek 345.)

**351. Chaucer. (3)**

**352. Shakespeare: Histories and Comedies. (3)**

**353. Shakespeare: Tragedies. (3)**

**354. Milton. (3)**

**360.Individual Authors. (3)‡**
Study of one or two or more authors. Titles of individual sections vary as content varies.

**387.** [487.]**Studies in Genre: Comedy, Epic, Satire, Tragedy, etc. (3) ‡**
Study of best or of typical examples of any one genre, such as comedy, epic, satire, tragedy.

**397. Regional Literature. (3)**
The study of a limited body of writers whose work is identified with a particular geographical region. Authors covered will differ, but representative examples are Frank Waters, Willa Cather, Rudolfo Anaya, Walter Van Tilburg Clark.

**406.** [481.]**The Folktale in English. (3)**
Tradition of folk motifs and themes in development of the tale as a form of storytelling in English and American literature.

**410. Literary Criticism. (3)**
Study of the major critical attitudes toward literature or intensive study of selected individual critics or critical approaches.
Prerequisite: 6 hours in literature.

**411.** [488.]**Special Topics. (3)†**

**427.** [436.]**The Teaching of English. (3)**
Study of ways to teach literature, writing, and grammer in elementary, middle, and high schools, emphasing the practical rather than the theoretical.

***440. Introduction to Linguistics. (3)**
(Also offered as Ling 440.) Broad overview of the fields of linguistics, principles and practices of linguistic analysis, sociolinguistics, psycholinguistics, and educational linguistics. Oriented primarily to the needs of present and prospective teachers.

***441. English Grammars. (3)**
Prerequisite: 440 or consent of instructor.

***445. History of the English Language. (3)**
Etymology, morphology, phonetics, and semantics of English; relation between linguistics and cultural change.

***449.** [415.]**Old English. (3)**
Elementary grammar, translations of prose and poetry.

***450.** [416.]**Old English Literature: Beowulf and Other Topics. (3)**
Prerequisite: 415 or permission of instructor.

**451.** [452.]**The Middle Ages. (3) ‡‡**
Titles of individual sections will vary as content varies.

**453. The English Renaissance. (3)‡‡**
Titles of individual sections will vary as content varies.

**454. Seventeenth-Century English Literature. (3) ‡‡**
Titles of individual section will vary as content varies.

**455. Restoration and Eighteenth-Century Literature. (3)‡‡**
Titles of individual sections will vary as content varies.

**456. English Romanticism. (3)**
Titles of individual sections will vary as content varies.

**457. Victorian Literature. (3)**
Titles of individual sections will vary as content varies.

**458. Modern British Literature. (3)**
Titles of individual sections will vary as content varies.

**459. Irish Literature. (3)**
Titles of individual sections will vary as content varies.

***460. Colonial and Revolutionary American Literature. (3)**
Titles of individual sections will vary as content varies.

**461. American Romanticism. (3)**
Titles of individual sections will vary as content varies.

**462. American Realism. (3)**
Titles of individual sections will vary as content varies.

**463. Modern American Literature. (3)**
Titles of individual sections will vary as content varies.

**464. American Humor. (3)**
American humorists from 1830 to present.

**470. Contemporary Literature. (3)‡‡**
Contemporary literature not confined to any one country or language, the study to be organized by genre, theme, or idea, or any other principle that affords special insights. Titles of individual sections will vary as content varies.

***475. Dante in Translation. (3)**
(See Italian 475.)

***480. Philosophy and Literature. (3)**
(See Engl-Phil 480.)

**485. Fiction before 1800. (3)**
Readings of major works of British fiction written before 1800. Investigation of ways in which novel achieved generic form and the development of certain techniques.

**486. Fiction of the Nineteenth Century. (3)**
Reading of major works of British fiction written since 1800. Emphasis will be upon the emergence of modern novel, refinement of techniques, central ideas.

**490. Senior Honors Thesis. (3)**
Open only to students admitted to honors in English. To be taken in the semester when the senior thesis is completed.

**497. Individual Study. (1-3 hrs. per semester, to a maximum of 6)**
Permission of the instructor is required before registering. The student should present a plan of study to the instructor.

**GRADUATE COURSES**

***500. Introduction to the Professional Study of English. (3)**
Required in first year of all graduate students who do not offer an equivalent. {Fall, Spring}

***501. Interdepartmental Seminar in the Culture of the United States.(3)**
(See Am St 501.)

***510. Criticism. (3)**
{Spring}

***511.** [588.]**Special Topics: History of Ideas, Literary Movements, etc.(3)†**
{Fall}

***521. Creative Writing—Prose Fiction. (3)‡**
Prerequisite: 422 or permission of instructor.
May be repeated for credit as content varies.

***522. Creative Writing—Poetry. (3)‡**
Prerequisite: 422 or permission of instructor.
May be repeated for credit as content varies.

***527. Studies in Rhetoric for Teachers. (3)**
(Also offered as SATE 527.) {Fall}

***528. Studies in Reading and Literature for Teachers. (3)**

(Also offered as SATE 528.) {Spring}

***537. Teaching Composition. (3)**
Fall

***538. Teaching Introductory Literature. (2)**
Fall

***540.** [573. ]**Language. (3)**

{Fall}

***551.** [513.]The Middle Ages. (3)‡‡
{Fall}

***553.** [523.]**The Renaissance. (3)‡‡**
{Fall}

***554.** [533.]**The Seventeenth Century. (3)‡‡**
{Fall}

***555.** [543.]**The Eighteenth Century. (3)‡‡**
{Spring}

***556.** [553.]**The Nineteenth Century. (3)‡‡**
{Fall, Spring}

***560. American Literature. (3)‡‡**
{Spring}

***570.** [563.]**The Twentieth Century. (3)‡‡**
{Spring}

***587. Genre: Comedy, Epic, Satire, Tragedy, etc. (3)‡**

***590.** [575.]**Problems and Methods of Literary Study. (**
{Spring}

***595.** [590.]**Colloquium. (4)‡**
{Fall, Spring}

***597.** [551.]**Problems for the Master's Degree. (1-3 h per semester)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total cre requirements.

***610. Studies in Criticism. (4)‡**

***640.** [630.]**Studies in Language. (4)**

***650.** [620.]**Studies in British Literature. (4)‡**

***660.** [600.]**Studies in American Literature. (4)‡**

***680.** [640.]**Special Studies: Types, Backgrounds, Forc (4)‡**

***697.** [651.]**Problems for the Doctor's Degree. (1-3 h per semester)**

***698.** [652.]**Independent Study. (1-3 hrs. per semest for maximum of two consecutive semesters)**
{Fall, Spring}

***699. Dissertation. (3-12 hrs per semester)**
See the Graduate Programs Bulletin for total cre requirements.

# ENGLISH-PHILOSOPHY

The combined major in English and philosophy is a interdepartmental major administered jointly by the two departments. Students interested in this progra should consult the Philosophy Department office. The purpose of the interdepartmental major is to develop an understanding of the history of ideas, ideals, and values; their expression in literature an philosophy; and the relation of these fields. The major will serve the interests of general education and will also be useful to many preprofessional students.

**MAJOR STUDY**
Students completing the English-philosophy major are not required to have a minor. It is recommende that courses in literature and philosophy in related periods be taken concurrently where possible.
The minimum requirement is 45 hours, including:

1. 18 hours in English courses, 12 of which are be numbered 300 or above.
2. 18 hours in philosophy courses, 12 of which a to be numbered 300 or above.
3. 6 hours additional of English or philosophy numbered 300 or above.

‡‡ May be repeated once for credit.

4. Engl-Phil 480.

**MINOR STUDY**
Not offered.

***480. Philosophy and Literature. (3)** English and Philosophy Staffs
(Also offered as Phil 480.) Selected philosophical movements and their relationships to literary masterpieces.
Prerequisites: 6 hours of literature and 3 hours of philosophy from the courses specified as requirements for the program.

# FINE ARTS

(See also Art, Music, Theatre Arts.)

**151. Artistic Traditions of the Southwest. (3)**
(Also offered as Art Hi, Music 151.) Pre-Columbian, American Indian, Spanish colonial, territorial, and modern traditions in art, dance, music and theatre. {Fall}

**229. Topics. (1-3)†** {Offered upon demand.}

**490. Interdepartmental Proseminar. (3)‡**
Open to juniors and seniors with the requisite grade-point average. See p. 54 for specific requirements. {Fall}

# FRENCH

See Modern and Classical Languages.

# GENERAL STUDIES

Robert O. Evans, Director
Humanities Bldg. 118, 277-4211

**PROFESSOR:**

Robert O. Evans, Ph.D., University of Florida

General Studies courses are offered in the General Honors and Undergraduate Seminar Programs. These courses are described in this catalog under the heading "Honors Work and Graduation with Honors."

Credit in these courses can normally be counted toward general graduation requirements in undergraduate degree-granting colleges and, in some instances, toward group requirements of the College of Arts and Sciences. For information on such applicability the student should apply to the office of the dean of the appropriate college.

**THE GENERAL HONORS PROGRAM**

With the exception of courses 111-112, which are open to all freshmen, and 211-212, which are open to all sophomores, these courses are normally restricted to students enrolled in the General Honors Program.

Explanation of footnotes not indicated will be found on p. 78 .

**111-112. Freshman General Studies Seminar. (3, 3)**
Broad, general reading and class discussion for freshmen with senior General Honors students acting as instructors and discussion leaders under faculty direction. {Fall, Spring}

**121-122. Freshman General Studies Seminar. (3, 3)**
Broad, general reading and class discussion for freshman honors students. Instructors and topics will vary from semester to semester. {Fall, Spring}

**211-212. Sophomore General Honors Seminar. (3, 3)**
Broad, general reading and class discussion for sophomores with senior General Honors students acting as instructors and discussion leaders under faculty direction. {Fall, Spring}

**221-222. Sophomore General Honors Seminar. (3, 3)**
Broad, general reading and class discussion for sophomore honors students. Instructors and topics will vary from semester to semester. {Fall, Spring}

**299. Individual Study. (1-3)‡‡**

**301-302. Honors Seminar. (3, 3)‡**
Selected seminar topics of an educationally broadening and generally interdisciplinary nature by staff of various departments. Instructors and topics will vary from section to section and from semester to semester. {Fall, Spring}

**399. Individual Study. (3, 3)‡‡**

**403-404. Senior Honors Colloquium. (3, 3)‡‡**
Educationally broadening seminars of various kinds specially designed to meet the needs of senior students in the program. Specific course offerings are determined in discussion with seniors during previous semesters. {Fall, Spring}

**THE UNDERGRADUATE SEMINAR PROGRAM**

Topics and instructors vary from section to section and from semester to semester. Open to all full-time undergraduate students. No prerequisites. Enrollment limited to 18 students per class. Grading on A/CR/NC or CR/NC only system.

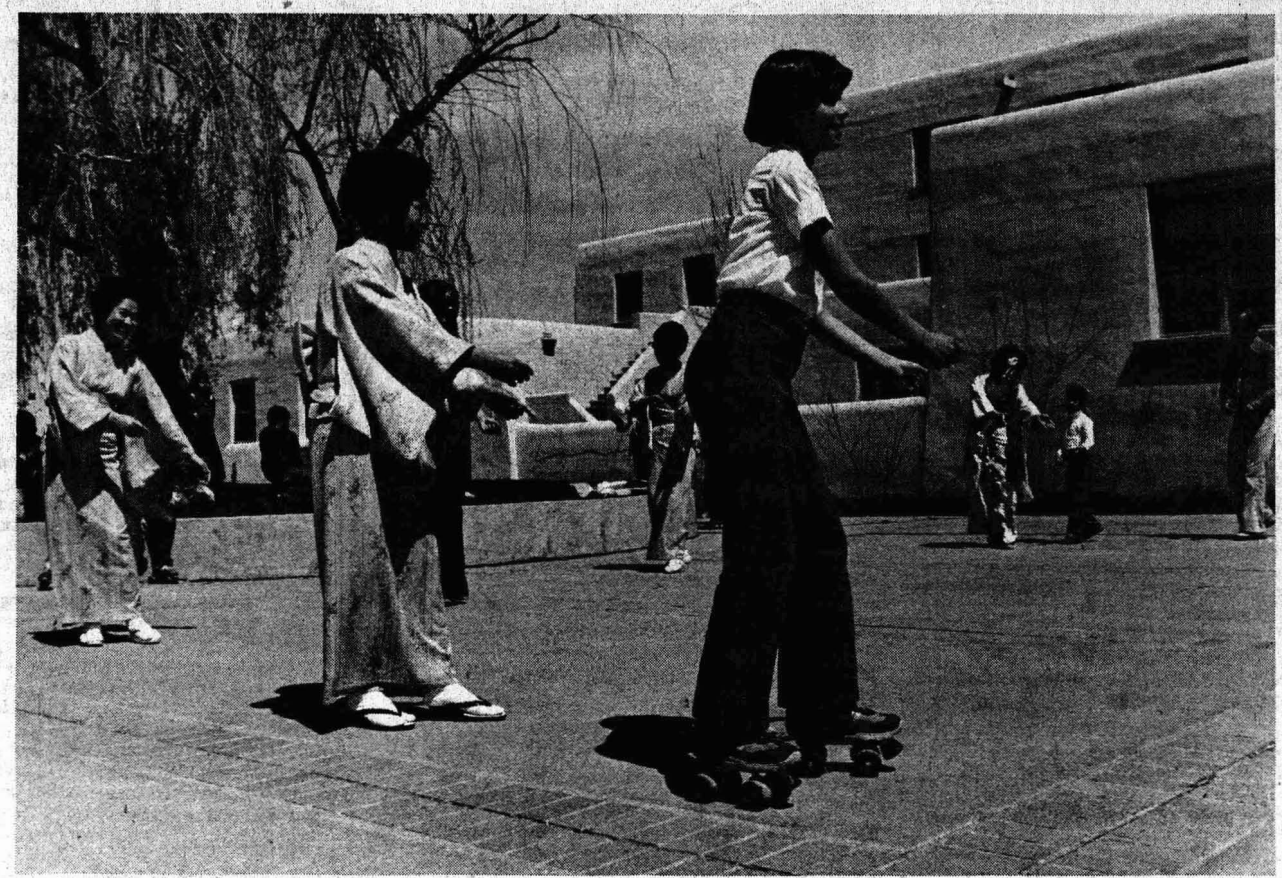
**331-332. Seminars in the General Area of the Humanities. (1, 1)‡**
Various sections, various topics each semester.

**333-334. Seminars in the General Area of the Sciences. (1, 1)‡**
Various sections, various topics each semester.

**335-336. Seminars in the General Area of the Social Sciences. (1, 1)‡**
Various sections, various topics each semester.

**337-338. Interdisciplinary Seminars. (1, 1)‡**
Various sections, various topics each semester.

‡‡ May be repeated for credit with permission of program director



# GEOGRAPHY

Richard E. Murphy, Chairperson
Hodgin Hall 201A, 277-5041

**PROFESSORS:**

Elinore M. Barrett, Ph.D., University of California, Berkeley
Iven V. Bennett, Ph.D., Boston University
Richard E. Murphy, Ph.D., Clark University
Rodman E. Snead, Ph.D., Louisiana State University

**ASSOCIATE PROFESSOR:**

Stanley A. Morain, Ph.D., University of Kansas

**ASSISTANT PROFESSORS:**

Bradley T. Cullen, Ph.D., Michigan State University, East Lansing
Jerry L. Williams, Ph.D., University of Oregon

**PROFESSOR EMERITUS:**

Robert D. Campbell, Ph.D., Clark University
New appointments to be made.

Explanation of footnotes not indicated will be found on p. 78

**MAJOR STUDY**
A total of 34 hours in geography plus Geol 101. In addition to Geog 101, 102, and 285L, the major must include courses from the following groups as indicated:

Physical geography—6 hours to consist of 351 and 481.
Human geography—9 hours selected from: 263, 360, 364, 365, 366, 367, 381, 393, 395, 472, 474, 475.

Regional geography—3 hours selected from courses numbered 301 to 338 and 212.

The rest of the courses for the major may be selected from any of the departmental offerings. One of these courses may be chosen, upon approval by the Chairperson of the department, from a related field of study. For those students who wish to emphasize particular aspects of geography, the following geography courses and related minors are recommended:

Climatology
Recommended courses in geography:
105L, 261, 303, 351, 352, 353, 361, 373, 462, 482, 483, 491.

Recommended distributed minor to include:
Math 162, 163, 345, 346; Physcs 103, 113L, 160-161, 163L.

Economic—Urban
Recommended courses in geography:
261, 263, 361, 365, 367, 462, 464.

Recommended distributed minor:
Econ 201, 341, 342, 364, 365, 440, 460, 466; Engr 350, 382, 390.

Geomorphology
Recommended courses in geography:
105L, 373, 481, 483.

Recommended distributed minor to include:
Geol 102, 105L, 106L, 225; 307L, 455L, 462, 482L; Physcs 103.

Political Geography
Recommended courses in geography:
201, 212, 263, 301, 302, 332, 333, 336, 337.

Recommended distributed minor:
Econ 200, 201, 424; Hist 101-102, 303, 336; Pol Sc 240, 351, 442.

**APPLIED GEOGRAPHY**
Cartography
Recommended courses in geography:
105L, 261, 285L, 361, 373, 385L, 462, 464, 482.
Recommended distributed minor to include:
Art St 121, 277; CS 490; Engr 362; Engr Civ 281L, 282L; Geol 455L.
Remote Sensing
Recommended courses in geography:
105L, 285L, 351, 356, 361, 373, 385L, 462, 481, 482, 505, 582 and any additional regional courses.
Recommended distributed minor to include:
Anth 120, 366; Biol 110; Econ 201, 342; Engr Civ 332; Geol 455L; Math 162, 345, 446.
Also recommended: Econ 341; Engr Civ 431.
Urban and Regional Land-Use Planning
Recommended courses in geography:
261, 263, 285L, 353, 356, 361, 365, 366, 367, 373, 464, 474.
Recommended distributed minor:
Am St 360; Arch 265, 464; Econ 201, 342; 465, 466; Engr 337, 338, 350, 382; Pol Sc 470.

**MINOR STUDY**
Geog 101, 102, and 15 additional hours, including one of the following: 263, 351, 381.

**GROUP REQUIREMENTS**
Geog 481 is accepted as a nonlaboratory science in fulfillment of the physical science (Group 4) requirement of the College of Arts and Sciences; all other geography courses are accepted toward fulfillment of the social science (Group 5) requirements in that College.

**INTRODUCTORY COURSES**

**101. Physical Geography. (3)** Staff
World Geography; physical elements. An introduction to the use of maps and globes and to a systematic analysis of world climates, vegetation, soils, and landforms, their distribution, interrelation, and significance to man. {Summer, Fall, Spring}

**102. Human Geography. (3)** Staff
World geography; human elements. An introduction to human geography comprising a systematic analysis of world population, demographic factors, ethnic groups, predominant economies, and political units, their distribution, interrelation, and interaction with the physical earth. {Summer, Fall, Spring}

**105L. Physical Geography Laboratory. (1)** Staff
Laboratory exercises designed to complement Geog. 101. Basic applied problems in the spatial processes of the physical environment. Map construction and reading, weather and climatic analysis, classification of vegetative and soil associations, landform distribution analysis.
Corequisite: 101. 2 hrs. lab. {Fall, Spring}

**201. World Regional Geography. (3)** Staff
An introduction to the regional geography of the world. Both physical and human aspects are studied along with current economic and political problems.

**261. Spatial Organization. (3)** Staff
Examination of time-space frameworks for looking at the world; strategies used to solve problems which distributions of people and their activities create within ecosystems; causal relationships between spatial structure and spatial process.

**263. Economic Geography.** [Economic Resources.]**(3)** Cullen
A systematic analysis of spatial economic patterns. Introduction to models of economic space and theories of spatial economic interaction. Analysis of effects of resource attributes and distributions upon economic activities. Examination of cultural-economic regions. {Fall}

**273. Map Reading and Interpretation. (3)**
Development of basic skills of map reading through classroom exercises on maps such as: street and highway; topographic; cognitive; thematic; and computer generated.

**285L. Cartography. (4)**
The graphical basis of cartography: an introduction to map design and construction. Exercises in basic drafting and lettering techniques, map projections, and in the problems of map design, data collection, data preparation, and graphic representation.
Pre- or corequisite: 101. {Fall}

**REGIONAL GEOGRAPHY**

**212. People and Land in Sub-Saharan Africa.** [Geography of Africa.]**(3)** Williams
(Also offered as Anth 212.) Regional geography of Sub-Saharan Africa followed by ethnographic and/or cultural-physical spatial topics from the areas of North Africa, West Africa, East Africa, South Central Africa, and Southern Africa.

***301. South America. (3)**
Discussion of the physical and cultural landscapes of Sou America, including settlement and patterns of resource us by aboriginal, colonial, and modern peoples. {Fall 19 and alternate years}

***302. Mexico and the Caribbean. (3)**
Discussion of the physical and cultural landscapes of Me ico, Central America, and the islands of the Caribbea including settlement and patterns of re- source use l aboriginal, colonial, and modern peoples. {Fall 1982 a alternate years}

***303. North America. (3)** Bennett
Distribution in the United States and Canada of climat landforms, soils, vegetation, population, economic acti ties, and other physical and human phenomena. The chan ing interrelations of these phenomena from one region another is emphasized. {Spring}

***304. The Southwest. (3)** Bennett
Distribution in the southwestern United States of climat landforms, soils, vegetation, population, economic acti ties, and other physical and human phenomena. The chan ing interrelation of these phenomena from one area another is emphasized. {Fall}

***332. Western Europe. (3)** Murphy
Regional geography of Europe from the Atlantic eastwa through Finland, Germany, Austria, and Italy. A descriptic analysis, and synthesis in spatial association of the physi and human attributes of this area. {Fall 1982}

***333. The Soviet Union and Eastern Europe. (3)** Murph Regional geography of the U.S.S.R. and of eastern Euro from Poland southward through Czechoslovakia, Hunga and the Balkans. A description, analysis, and synthesis spatial association of the physical and human attributes this area. {Fall 1983}

***336. The Middle East. (3)** Snead
Regional geography of southwestern Asia from Turk through Afghanistan and southward to the tip of the Arab Peninsula. Physical and cultural aspects are studied alc with current economic and political problems. Numerc maps and slides. {Fall 1981}

***337. The Indian Subcontinent. (3)** Snead
Regional geography of south central Asia including Inc Pakistan, Bangladesh, Nepal, Bhutan, and Sri Lanka. Ph ical and cultural aspects of this diverse region are stud along with current economic and human problems. Num ous maps and slides. {Spring 1982}

***338. Southern Africa—Environment and Land Use.** Williams
A topical perspective of Africa south of the Equator (E Africa, Central Africa, South Africa) which will incorpor both physical and cultural characteristics. {Spring 1983}

**ADVANCED COURSES IN PHYSICAL GEOGRAPHY**

***351. Systematic Climatology. (3)** Bennett
An analysis of factors affecting climatic variations types, particularly solar and terrestrial radiation, tempe ture conditions, atmospheric pressure and wind patter and moisture and precipitation characteristics.
Prerequisite: 101 or Physcs 103 or permission of instruc {Fall}

***352. Regional Climatology. (3)** Bennett
The classification and world distribution of temperat regimes, air mass types, precipitation areas, and clim regions.
Prerequisite: 351 or 101 and permission of instruc {Spring 1982 and alternate years}

***353. Microclimatology. (3)** Bennett
The study of heat exchange, temperature, moisture, wind in air close to the ground in local areas. Analysi the roles of vegetation, landforms, soils, water bodies, urban structures in producing small-scale variations in ited locales. {Spring 1983 and alternate years}

***356. Biogeography. (3)** Morain
A review of major concepts and theories in historical geography including a discussion of the principles of p ulation ecology and recent developments in nume biogeography. Course work incorporates a broad outlin the regional patterns of plant and animal development.
Prerequisite: 101 or Biol 121L or permission of instru {Fall 1981}

***358. Soil Geography. (3)** Morain
An introduction to the physical and chemical properties of soils and the role of soils in shaping civilization. Lectures and field excursions focus on processes of soil genesis, morphology and descriptions, aspects of soil fertility, and man's impact on the soil resource.
Prerequisite: 101. {Fall 1982 and alternate years}

***360. Population Geography. (3)**
Spatial analyses of basic population characteristics including migration and mobility, urbanization, food supply and environmental alteration. Population exercises and projects will be assigned.

***364. Transportation Geography. (3)** Cullen
Analysis of spatial principles of transportation, including theories of interaction, network structure, and the role of transport in space economy.

**481. Geomorphology. (3)** Snead
(Also offered as Geol 481.) Origin, development, and classification of landforms, with detailed consideration of gradation processes. Open to geography majors and minors who have completed Geol 101. {Spring 1983 and alternate years}

**483. Physical Geography of North America. (3)** Snead
Detailed study of the physiographic regions of North America—the United States, Canada, and Mexico. Major emphasis is on surface landforms and associated physical phenomena with a consideration of soils, vegetation, and Pleistocene climatic influences.
Prerequisite: 481 or Geol 482L or permission of instructor.

**ADVANCED COURSES IN HUMAN GEOGRAPHY**

***365. Urban Geography. (3)** Williams
Urbanization as a spatial process. Evolution of the socio-economic urban morphology through time. Perception of the modern city. Ecological and environmental constraints of urbanization. Selected field projects applied to the local environment. {Fall}

***366. Land Use Practice and Planning. (3)** Williams
An examination of land-use policy in the mid-Rio Grande Valley. Lectures interlaced with field exercises where the student maps various land-use characteristics to be correlated with present maps of planning and regulatory policy. {Spring}

***367. Urban Spatial Patterns. (3)** Williams
An analysis of internal forces which influence the morphology of the city. Review of internal and regional urban location models with applications to cities in New Mexico. Refinements of urban and regional land use mapping are studied through student field projects.

***381. Political Geography. (3)** Murphy
Analysis of the world political map; the sense of territory of nations; problems of the size, population, productivity, boundaries, and location of countries; geographical appraisal of economic, military, and political power, and the prospects for peace. {Spring 1983}

***391. Arid Lands. (3)** Snead
Human adaptation as a function of limited resources. Individuals and societies in the world's low and middle latitude arid lands. Problems and potentials of viable settlement in arid lands. {Offered upon demand}

***393. Food Production Systems. (3)**
Systems which man has evolved to supply plant and animal food, emphasizing their relation to ecological conditions, cultural conditions, human nutrition, and human population.

***395. Man and Nature in America. (3)** Barrett
Attitudes toward the natural environment as they have evolved in the United States; resulting patterns of resource exploitation; development and impact of the conservation movement. {Fall}

***402. Conservation. (3)**
Conservation as a basic and necessary feature of systems design; implications of conservation in such world systems as energy and food production, and in such local systems as heating and transportation; conservation and the future. {Offered upon demand}

***404. Settlement in New Mexico. (3)** Staff
Origins of settlement in New Mexico. Patterns of development leading to the present distribution. Features, including sites, structures, and orientations, as expressions of various cultural systems: Settlement-environments as expressions of model personalities and as behavioral settings. {Offered upon demand}

***475. Psychological Geography. (3)** Campbell
Geography of human behavior; defining and measuring behavioral outcomes of the man/environment interaction; principles of interaction; concepts of behavior regions. {Offered upon demand}

**ADVANCED COURSES IN GEOGRAPHICAL METHODOLOGY**

***361. Quantitative Methods in Geography. (3)** Cullen
Use of probability theory and descriptive statistics in geographic applications, models, and theories.
Prerequisite: college algebra. {Fall 1981 and alternate years}

***373. Air Photo Interpretation.** [Map Reading Air Photo Interpretation.]**(3)** Morain, Snead
Techniques of analysis of aerial photographs for geographic study and research. Course also introduces remote sensing.
Prerequisite: 101. {Fall}

***385L. Advanced Cartography. (4)** Staff
The technical basis of cartography: advanced map design and production. Historical development of cartography. Grid systems, advanced drafting techniques, the graphic representation of qualitative and quantitative data, and introductory computer graphics.
Prerequisite: 285L. {Spring 1982}

***401. Geographic Writings and Analysis. (3)** Staff
An investigation and critical examination of the geographic literature. Comparative analysis of modern and older works, descriptive and analytical works, and geographic and non-geographic approaches to data. Special emphasis upon trends and recent developments. {Offered upon demand}

***453. Inter-Disciplinary Asian Studies. (3)**
(Also offered as Hist, Pol Sc 453.) Cross-cultural and interdisciplinary investigations of problems and methodologies current in Asian Studies.

***462. Advanced Quantitative Methods in Geography. (3)** Cullen
Nonstochastic mathematical techniques and spatial statistics for the analysis of locational structure.
Prerequisite: 361 or permission of instructor. {Spring 1982}

***464. Location Theory. (3)** Cullen
Spatial economic theory, including discussion of partial and general equilibrium approaches, location of the producer, land use theory, central place theory, spatial price equilibrium, linear programming, and input-output models.
Recommended: 261 and 263. {Fall, 1982}

***471. Man-Environment Systems. (3)** Campbell
Using a systems model to analyze man-environment interactions; investigation of small-scale systems; techniques and methods of systems analysis applied to man-environment systems. {Offered upon demand}

***482. Remote Sensing. (3)** Morain
Techniques of remote sensing of environment using infrared, radar, microwave, and multispectral sensors.
Prerequisite: 373 or Geol 455L. {Spring}

***505. Field Methods. (3)** Staff
Prerequisite: 285L or permission of instructor. {Fall 1982 and alternate years}

**SEMINARS, WORKSHOPS, AND PROBLEMS**

**129.** [429.]**Workshop in the Principles of Physical Geography. (4)**
Fundamental aspects of physical geography, its concepts, methods, and tools, and the technique of their application and utilization. Lecture, demonstration and individual participation. {Offered upon demand}

***478. Seminar in International Studies. (3)** Slavin
(Also offered as Econ, M&CL, Pol Sc, Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his particular background and relating it to international matters. **Open only to seniors.**

**491-492. Problems. (1-3, 1-3 hrs. semester)** Staff
Supervised individual study and field work. {Summer, Fall, Spring}

***501. Seminar in the History and Philosophy of Geography. (3)** Staff
{Fall 1981 and alternate years}

***511. Seminar in Physical Geography. (3)** Staff

***512. Seminar in Environmental Problems. (3)** Barrett
{Spring}

***521. Seminar in Regional Geography. (3)** Staff
{Offered upon demand}

***551-552. Problems. (1-3, 1-3 hrs. semester)** Staff

***555. Inter-Disciplinary Seminar: Asia. (3)**
(Also offered as Hist, Pol Sc 555.) {Offered upon demand}

***560. Seminar in Human Geography. (3)** Staff
{Offered upon demand}

***566. Seminar in Land-Use Planning. (3)** Williams
{Offered upon demand}

***571. Seminar in Man-Environment Systems. (3)** Campbell
{Offered upon demand}

***575. Seminar in Psychological Geography. (3)** Campbell
{Offered upon demand}

***582. Seminar in Remote Sensing. (3)** Morain
{Fall 1982 and alternate years}

***599. Master's Thesis. (1-6 hrs. per semester)**

# GEOLOGY

Rodney C. Ewing, Chairperson
Northrop Hall 141, 277-4204

**PROFESSORS:**

Roger Y. Anderson, Ph.D., Stanford University
F. Donald Bloss, Ph.D., University of Chicago
Douglas G. Brookins, Ph.D., Massachusetts Institute of Technology
Wolfgang E. Elston, Ph.D., Columbia University
Klaus Keil, Ph.D., Johannes Gutenberg University, Mainz, Germany
Lee A. Woodward, Ph.D., University of Washington

**ASSOCIATE PROFESSORS:**

Jonathan F. Callender, Ph.D., Harvard University
Rodney C. Ewing, Ph.D., Stanford University
Raymond V. Ingersoll, Ph.D., Stanford University
Albert M. Kudo, Ph.D., University of California, San Diego
Barry S. Kues, Ph.D, Indiana University

**ASSISTANT PROFESSORS:**

Jeffrey A. Grambling, Ph.D., Princeton University
Stephen P. Huestis, Ph.D., University of California, San Diego
Kenneth D. Mahrer, Ph.D., Stanford University
Stephen G. Wells, Ph.D., University of Cincinnati
Crayton J. Yapp, Ph.D., California Institute of Technology

**FACULTY ASSOCIATES:**

Edward C. Beaumont, M.S., University of New Mexico
John W. Shomaker, M.S., University of New Mexico

**PROFESSORS EMERITI:**

J. P. Fitzsimmons, Ph.D., University of Washington
Vincent C. Kelley, Ph.D., California Institute of Technology
Stuart A. Northrop, Ph.D., Yale University
Sherman A. Wengerd, Ph.D., Harvard University

**MAJOR STUDY**

**For the degree of Bachelor of Arts:** Geol 101, 105L, 311L, 312L, 313L, 314L, 317L, 319L, 401, 490 and 7 additional hours in geology courses numbered above 300, Chem 121L, 122L, Math 162, 163 and Physcs 160, 161.
A student may obtain a distributed minor with the above program of study upon completion of 8 hours of courses, all of which must be numbered above 299, in any one of the following departments: Anthropology, Biology, Chemistry, Geography, Mathematics, Physics, or any department in the College of Engineering. Alternatively the distributed minor may be satisfied with Math 264, Physics 262 and one additional course above 299 of the above departments.

**For the degree of Bachelor of Science:** Geol 101, 102, 105L, 106L, 311L, 312L, 313L, 314L, 317L, 318L, 319L, 401, 420L, 490, and any two of the following: Geol 405L, 410, 411L, 426L, 427, 441, 471L, 481L, 487. In addition, Chem 121L, 122L, Math 162, 163, 264, 345, Physics 160, 161, 262, and English 219.
Students wishing to specialize in related fields such as geochemistry, paleontology or geophysics may make lim-

ited substitutions in their program with the prior approval of the department chairperson.
Students completing the B.S. program will have a distributed minor.
Prospective majors are encouraged to begin their lower division requirements in mathematics, chemistry, and physics as early as possible.

**DEPARTMENTAL HONORS**
Students seeking honors in geology should consult with the department chairperson no later than two full semesters prior to graduation. Geology 493 and 495 are required, as is a written senior thesis which will be orally defended. Eligibility is not limited to students in the College of Arts and Sciences.

**MINOR STUDY**
Geol 101, 105L, 311L or 317L, and 13 additional hours, no more than 4 of which may be taken at the 100-299 level. It should be noted that Chem 121L is pre- or corequisite for Geol 311L, Chem 122L is pre- or corequisite for Geol 312L, and Math 162 and Physics 160 or instructor's premission is required for Geol 317L.
New undergraduates with the proper prerequisites may take Geol 401 for as many as 4 credits, but no more than 2 credits may be applied to the undergraduate requirements for a minor or major in geology. For graduates, no more than 2 credits in Geol 401 may be applied to the 24 credits of course work required for the M.S. degree, and no more than 2 credits may be applied to the requirements for the Ph.D. degree beyond the M.S. requirements.

**MINOR STUDY IN PALEOECOLOGY**
See p. 158.

**CURRICULUM**

**100. Natural Science. (4)**
An introduction to the Natural Science disciplines. Emphasis on intensive skills improvement in reasoning, mathematics, communications, reading and comprehensive study techniques which are required for further study in any of the Natural Science disciplines. Individual courses will emphasize content pertinent to the department offering the course, but all courses will be interdisciplinary and focus on skills development. For students who score 17 or below in Natural Science on the ACT, or who are admitted with a Natural Science deficiency.

**101. Physical Geology. (3)** Staff
Materials composing the earth, work of agencies, both external and internal, modifying its surface and rock-forming processes. {Summer, Fall, Spring}

**102. Historical Geology. (3)** Ingersoll
History of the earth and the evolution of continents and ocean basins; evolution of life.
Prerequisite: 101; corequisite: 106L. {Spring}

**103. Earth Resources and Man. (3)** Brookins, Elston, Ewing
Geologic occurrences of fuels and minerals and their influence on domestic and world affairs.
Prerequisite: 101. {Summer, Fall, Spring}

**104. Life on Earth. (3)** Kues
Origin and evolution of life and some aspects of paleoecology.
Prerequisite: 101. {Fall}

**105L. Physical Geology Laboratory. (1)**
Minerals, rocks, and topographic maps; occasional field trips.
Corequisite: 101. 2 hrs. lab. {Summer, Fall, Spring}

**106L. Historical Geology Laboratory. (1)**
Paleogeographic reconstructions; geometry of plate tectonics; evolution of the western United States.
Prerequisite: 105L; corequisite: 102. 2 hrs. lab. {Spring}

**107L. Earth Resources and Man Laboratory. (1)** Staff
Ore specimens, exploration and utilization techniques; occasional field trips.
Corequisite: 103. 2 hrs. lab. {Summer, Fall, Spring}

**108L. Life on Earth Laboratory. (1)** Kues
Fossils and sedimentary rocks; field trips.
Corequisite: 104. 2 hrs. lab. {Fall}

**209. The Earth Environment. (3)** Anderson, Kues
(Also offered as Paleoe 209.) Studies of the atmosphere, the ocean, and the terrestrial environment as a total system, including environments of the past. Interrelationships of physical, biological, and human processes and resources. {Summer, Fall, Spring}

**215. Interior of the Earth. (3)** Huestis, Mahrer
Earthquakes and seismic risk, including New Mexico earthquakes; propagation of seismic waves; earth's magnetism, gravity, and thermal state; internal constitution of the earth.
Prerequisite: 101 or permission of instructor. {Spring}

**225. Oceanography. (3)** Huestis, Kudo
The ocean as a physical and chemical feature and a dynamic process. {Summer, Spring}

**265.** [465.]**Lunar and Planetary Geology. (3)** Elston
Geology of the moon and planets as deduced from visual and geophysical observations, space probe data, laboratory experiments, meteorites, tektites, and terrestrial analogs of lunar and planetary features.
Prerequisites: 101 or 102, or permission of instructor. {Spring 1982 and alternate years}

****311L.** [301L.]**Mineralogy I.** [Mineralogy.]**(4)** Ewing, Keil
Introduction to crystallography, crystal chemistry and basic crystal structures and their relation to physical and chemical properties of materials. Laboratory will include hand specimen mineral identification.
Prerequisites: 101, 105L; pre- or corequisite: Chem 121L. 2 lectures, 6 hrs. lab. {Fall}

****312L.** [302L.]**Mineralogy II.** [Petrology.]**(3)** Ewing, Grambling
Systematic review of the structure, chemistry, physical and optical properties of rock-forming minerals. Laboratory will include optical mineralogy and microscopic identification of non-opaque minerals.
Prerequisite: 311L; pre- or corequisite: Chem 122L. 2 lectures, 3 hrs. lab. {Spring}

****313L.** [421L.]**Petrology I.** [Optical Mineralogy.]**(3)** Callender, Grambling, Kudo
Introduction to classification, identification, occurrence and origin of igneous and metamorphic rocks. Laboratory will integrate hand-specimen identification and petrography.
Prerequisite: 312L, Chem 122L. 2 lectures, 3 hrs. lab. {Fall}

****314L.** [422L.]**Petrology II.** [Petrography.]**(3)** Callender, Grambling, Kues
Introduction to classification, identification, occurrence and origin of metamorphic and sedimentary rocks. Laboratory will integrate hand-specimen identification and petrography.
Prerequisite: 313L, 317L. 2 lectures, 3 hrs. lab. {Spring}

****317L.** [307L.]**Structural Geology. (4)** Callender
Nature and origin of rock structures and deformations; principles of plate tectonics; map and stereographic problems.
Prerequisites: 105L, Math 162, Physics 160 or permission of instructor. 3 lectures, 3 hrs. lab. {Fall}

***318. Applications of Mathematics in Earth Science. (3)** Huestis
Selected mathematical techniques of geology and geophysics, including Fourier analysis, geometrical concepts, and geological applications of probability and statistics; introduction to FORTRAN programming with examples from the Earth Sciences; computer graphics.
Prerequisites: Math 163, 345; Physics 161. {Fall}

****319L. Field Geology and Reports. (4)** Ingersoll, Wells
Principles and techniques of field mapping; content and arrangement of reports; layout and preparation of illustrations.
Prerequisites: 314L, 317L. 1 lecture and 1 full day in field each week. {Fall}

****333L. Environmental Geology. (3)** Anderson, Wells
Interrelationship of earth processes and man. Concepts and case histories in resource and land use, land stability, hydrology, and waste management.
Prerequisite: 101 or 209. 3 hrs. lab. {Spring 1982 and alternate years}

***401. Seminar. (1)‡‡** Staff
Current topics in geology.
Prerequisites: 314L, 317L. {Fall, Spring}

****405L.** [315L.]**Thermodynamics and Physical Foun tions of Geochemistry.** [Physical Geochemistry.]**(4)** Yapp
Thermodynamics and application to geologic syster phase equilibria, phase rule, ideal and nonideal solution
Prerequisites: 313L, Math 264; corequisite: 314L. 3 l tures, 3 hrs. lab. {Spring}

***410. Fundamentals of Geochemistry. (3)** Brookins, Ya
Geochemistry of igneous, metamorphic, and sediment rocks. Geochemical methodology.
Prerequisite: 314L. 3 lectures. {Spring}

***411L. Invertebrate Paleontology. (4)** Kues
General principles and familiarization with diagnostic f tures of fossils. Introduction to environmental implicatio
Prerequisite: 8 hrs. of geology or biology. 2 lectures, 6 h lab. {Spring}

***412L. Index Fossils. (3)** Kues
Principles of biostratigraphy; characteristics of fossils assemblages diagnostic of each geologic period; evolut of paleocommunities through time.
Prerequisite: 411L or permission of instructor. 2 lectu 6 hrs. lab. {Fall}

***420L. Advanced Field Geology. (4)** Callender, Woodwa
Geological mapping; special field problems.
Prerequisite: 319L. 1 full day in field each week plus 1 lecture during week. {Spring}

***426L. Exploration Geophysics. (4)** Mahrer
Principles and applications of gravity, magnetic, seism electrical, and electromagnetic methods in subsurface ploration. Field investigations and interpretations.
Prerequisites: 101, Math 163, Physcs 161. 3 lectures hrs. lab. {Fall}

***427. Solid Earth Geophysics. (3)** Huestis
(Also offered a Physics 327.) Structure, constitution, deformation of earth as determined by gravity, magne seismology, heat flow, and earth currents. Related aspe of plate tectonics.
Prerequisites: 101, Math 264, Physcs 161. {Spring}

***431L. Palynology—Micropaleontology. (4)** Anderson
Studies of the morphology, methods of identification, e ogy and applications of pollen, spores, nannofossils, f minifera and other microfossils.
Prerequisite: 105L, some biology strongly recommend 3 lectures, 3 hrs. lab. {Fall 1981 and alternate years}

***439. Paleoclimatology. (3)** Anderson, Yapp
History of the Earth's climate. Examination of method climatic reconstruction. Emphasis on Pleistocene and ocene climatic records.
Prerequisite: 105L. 3 lectures, {Fall, 1981 and alter years}

***441L. Stratigraphy and Sedimentology. (4)** Ingersoll
Provenance, dispersal, deposition, diagenesis, classi tion of sediments; principles of stratigraphy; depositi systems and basin analysis.
Prerequisite: 314L. 3 lectures, 3 hrs. lab. {Fall}

***442. Petroleum Geology. (3)**
Inductive approach to the principles of oil origin, migrat and accumulation. Characteristics of oil and gas reserv techniques of petroleum exploration.
Prerequisite: 441L or permission of instructor. {Offe upon demand}

****450. Geology of New Mexico. (3)** Callender
Description of geologic features including structures, l forms, and mineral resources of New Mexico. For e science teachers at high schools and junior high schoo
Prerequisite: 101. {Offered upon demand}

***455L. Photogeology and Air Imagery Analysis. (3)** W
Remote sensing of geology and topographic features; togrammetric computations; stereoscopy; preparatio planametric topographic and geologic maps from air ph and imagery.
Prerequisites: 101, 105L, Math 162, or permission o structor. 2 lectures, 3 hrs. lab. {Spring 1983 and alter years}

***462. Hydrogeology. (3)** Wells
Occurrence of groundwater with emphasis on water m ment, water quality and hydrologic properties of earth terials; processes of surface waters with emphasis on r and hydrograph analyses.
Prerequisites: 105L, Math 162, or permission of instru {Fall 1982 and alternate years}

**471L. Mineral Deposits. (4)** Elston
rigin, classification, occurrence, and exploration of min-al deposits.
rerequisites: 314L, 317L. 3 lectures, 3 hrs. lab. {Fall}

**472. Quantitative Hydrogeology. (3)** Staff
andling of quantitative hydrologic data needed for analysis ground-water systems under induced stress.
rerequisite: 462. 3 lectures. {Offered upon demand}

**475. Uranium Deposits. (3)** Brookins
eology and geochemistry of uranium deposits in igneous, etamorphic and sedimentary rocks. Distribution and undance of uranium in rocks. Thorium-uranium and other emental behavior during magmatic, metamorphic, weath-ing and sedimentologic processes.
erequisite: permission of instructor. {Spring 1983}

**481L. Geomorphology and Surficial Geology.** eomorphology.)**(4)** Wells
lso offered as Geog 481.) Origin and development of ndforms with emphasis on weathering, soils, hillslope ocesses, fluvial systems and surficial geology; occasional ld trips.
erequisites: 101 and 105L or permission of instructor. 3 ctures, 3 hrs. lab. {Fall 1981 and alternate years}

**482L. Geomorphology of the United States. (3)** Wells
tailed study of the physiographic provinces and sections the United States; emphasis on western United States.
erequisite: 481L or permission of instructor. Offered upon mand

**483L. Quantitative Geomorphology. (3)** Wells
ld investigations of geomorphic processes and landscape velopment with detailed consideration of fluvial, hillslope, uvial fan and pediment systems. Emphasis on quantita-e treatment of field data and application to environmental oblems.
erequisite: 481L or permission of instructor. 1 lecture, 4 s. lab. {Spring 1982 and alternate years}

**487L. Advanced Mineralogy. (4)** Ewing
ystallographic principles; structure, chemistry, physical operties, and paragenesis of rock-forming minerals; de-minative mineralogy by hand specimen, optical, and x-methods.
erequisites: 311L, Chem 122L. 2 lectures, 6 hrs. lab. pring 1983 and alternate years}

**490. Geologic Presentation. (1)** Staff
ident reviews of geologic literature and critique.
erequisite: senior standing. {Fall, Spring}

**491-492. Problems. (1-3, 1-3)**

**493. Independent Study. (3)** Staff
lependent study for departmental honors.
erequisite: candidacy for honors in geology. {Offered on demand}

**495. Senior Thesis. (3)†**
erequisite: candidacy for honors in geology. {Offered on demand}

**511. Sedimentary Geochemistry. (3)** Brookins
- or corequisite: 314L. 3 lectures. {Fall 1982 and alter-e years}

**512L. High-temperature Geochemistry. (3)** Kudo
- or corequisites: 314L, 405L. 2 lectures, 3 hrs. lab. pring 1983 and alternate years}

**514. Geochronology. (3)** Brookins
requisite: 314L; 405L recommended. {Fall 1982 and mate years}

**515L. Stable Isotope Geochemistry. (3)** Yapp
requisite: consent of instructor. {Spring 1982 and alter-e years}

**516L. Structure Analysis by X-ray Crystallography. (4)** ng
requisites: Math 264 and permission of instructor. 2 ures, 6 hrs. lab. {Spring 1982 and alternate years}

**520. Advanced Mineral Deposits. (3)** Elston
requisite: 471L. {Spring 1983 and alternate years}

**522L. Petrography of Opaque Ores. (3)** Keil
equisites: 313L, 471L. 1 lecture, 6 hrs. lab. {Fall 1982 alternate years}

**523L. Meteoritics and Cosmochemistry. (3)** Keil
equisite: 314L or permission of instructor. 2 lectures, s. lab. {Spring 1982}

***516. Selected Topics in Geomorphology. (3)** Wells
{Offered upon demand}

***517L. Instrumental Methods in Geochemistry. (2-4)†‡** Keil, Yapp
Prerequisite: permission of instructor. 1 or 2 lectures, 3 or 6 hrs. lab. {Offered upon demand}

***518L. Microprobe Analysis and Scanning Electron Microscopy.** [Microprobe Analysis.]**(3)** Keil
Prerequisite: permission of instructor. 2 lectures, 3 hrs. lab. {Spring}

***519L. Selected Topics in Geochemistry. (2-4)‡** Staff
Prerequisite: permission of instructor. {Spring}

***520. Selected Topics in Geobiology. (3)†‡** Kues
Prerequisite: permission of instructor. {Spring}

***521L. Metamorphism. (4)** Grambling, Callender
Prerequisites: 314L, 405L. 3 lectures, 3 hrs. lab. {Spring 1982 and alternate years}

***522. Selected Topics in Geophysics. (3)** Huestis, Mahrer
Prerequisite: permission of instructor.

***523. Tectonics of Sedimentary Basins. (3)** Ingersoll
Prerequisites: 317L and 441L. {Spring 1983 and alternate years}

***525L. Comparative Tectonics. (4)** Woodward
Prerequisite: 317L. 2 lectures, 3 hrs. lab. {Fall}

***527L. Advanced Structural Geology. (3)** Callender, Grambling
Prerequisites: 317L and either 426L or 427, or permission of instructor. 2 lectures, 3 hrs. lab. {Offered upon demand}

***528. Regional Tectonics. (3)** Woodward
{Spring 1983 and alternate years}

***531L. Igneous Petrology. (4)** Kudo
Prerequisites: 313L. 3 lectures, 3 hrs. lab. {Fall}

***537L. Stratigraphic Analysis. (3)** Staff
Prerequisites: 317L, 441L. 2 lectures, 3 hrs. lab. {Offered upon demand}

***540. Advanced Stratigraphy—Sedimentology. (3)** Anderson, Ingersoll
(Also offered as Paleoe 540.)
Prerequisite: permission of instructor. {Spring}

***542L. Subsurface Geology. (3)**
Pre- or corequisite: 442 or 462. 1 lecture, 6 hrs. lab. {Offered upon demand}

***544L. Sedimentary Petrology. (4)** Ingersoll
Prerequisites: 314L and 441L. 2 lectures, 6 hrs. lab. {Spring 1982 and alternate years}

***547-548. Seminar. (2-3, 2)**

***551-552. Problems. (1-3, 1-3 hrs. each semester)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# GERMAN

See Modern and Classical Languages.

# GREEK

See Modern and Classical Languages.

# GUIDANCE

See Education, Guidance and Counseling.

# HEALTH, PHYSICAL EDUCATION, AND RECREATION

See Education, Health, Physical Education and Recreation.

# HISTORY

Janet Roebuck, Chairperson
Mesa Vista 1104, 277-2451

**PROFESSORS**

Donald C. Cutter, Ph.D., University of California (Berkeley)
William M. Dabney, Ph.D., University of Virginia
Richard N. Ellis, Ph.D., University of Colorado
Richard W. Etulain, Ph.D., University of Oregon
Frank W. Ike, Ph.D., University of California (Berkeley)
Robert W. Kern, Ph.D., University of Chicago
Edwin Lieuwen, Ph.D., University of California (Berkeley)
Charles McClelland, Ph.D., Yale University
Gerald D. Nash, Ph.D., University of California (Berkeley)
Janet Roebuck, Ph.D., University of London

**ASSOCIATE PROFESSORS**

Peter J. Bakewell, Ph.D., Cambridge University
Michael L. Conniff, Ph.D., Stanford University
Peter R. Kolchin, Ph.D., Johns Hopkins University
Steven P. Kramer, Ph.D., Princeton University
David R. Maciel, Ph.D., University of California (Santa Barbara)
Jonathan Porter, Ph.D., University of California (Berkeley)
Noel H. Pugach, Ph.D., University of Wisconsin
Howard N. Rabinowitz, Ph.D., University of Chicago
Richard G. Robbins, Ph.D., Columbia University
Donald E. Skabelund, Ph.D., University of Utah
Ferenc M. Szasz, Ph.D., Rochester University

**ASSISTANT PROFESSORS**

Richard M. Berthold, Ph.D., Cornell University
William Roberts, Ph.D., Johns Hopkins University
M. Jane Slaughter, Ph.D., University of New Mexico
Jake W. Spidle, Ph.D., Stanford University
Charlie R. Steen, Ph.D., University of California (Los Angeles)
Donald D. Sullivan, Ph.D., University of Colorado

Explanation of footnotes not indicated will be found on p. 78

**MAJOR STUDY**

The history program for majors, as outlined below, is designed to provide some of the cultural background necessary for intelligent and responsible living, and also to prepare students for such specific activities as careers in law, the civil and diplomatic services, and the teaching profession.
Requirements: four lower-division courses which must include 101 and 102, and one of the following pairs: 161 and 162, 251 and 252, or 281 and 282. Eight 300- or 400-level courses, which must include 309, and a minimum of two courses each from three of the following areas: European, United States, Hispanic-American, Far Eastern history, 496 courses may be repeated once for credit to fulfill field requirements.

**MINOR STUDY**

The planned program outlined below is designed to supplement a student's work in his/her major field. The lower-division requirement includes a minimum of two semester courses to be selected from the following: Hist 101, 102, 161, 162, 251, 252, 281, 282. The upper-division requirements include a minimum of five semester courses, at least three of which must be concentrated in European history, American history, Hispanic-American history, or Far Eastern history.
The prerequisites for certain courses may be waived with permission of instructor.
Hist 410, 411, 491 can be used as electives for undergraduate majors, but not as field requirements.

**PERIOD MINOR**

For requirements, see "Comparative Literature."

**DISTRIBUTED MINOR FOR HISTORY MAJORS**

A major may offer a distributed minor in American studies, Asian studies, comparative literature, or Russian studies, as well as a minor in a single department. Approval of the Chairperson of the History Department is required for all distributed minors.

**DEPARTMENTAL HONORS**

The Department of History has an honors program which a student may enter with the recommendation of his/her departmental adviser after completing 80 hours. To complete the program, a student must take 9 hours in honors courses. A student may offer this program in lieu of one of the required fields in history.

**CURRICULUM**

**100. Social Science. (4)**
Introduction to the Social Science disciplines. Emphasis on intensive skills improvement in communication, reading comprehension, study techniques and logical reasoning

which are required for further study in any of the Social Science disciplines. Course themes may vary by department, but all courses will be interdisciplinary and will emphasize skills. For students who score 13 or below in Social Science on the ACT or who are admitted with a Social Science deficiency.

**101-102. Western Civilization. (3, 3)** Berthold, Kern, Kramer, McClelland, Robbins, Roebuck, Skabelund, Slaughter, Steen, Spidle, Sullivan
101—ancient times to 1648; 102— 1648 to present. {Summer, Fall, Spring}

**108-109. History of the Americas. (3, 3)** Cutter
108—survey of the history of North and South America from the age of discovery to 1821 European exploration, settlement, and exploitation of colonial America under the Spanish, French, and English; 109—survey of the cultural, social, political, and economic history of North and South America from 1821 to modern times.

**110. "The Whole Works": The Making of the Modern World. (3)**
A topical approach to the various facets of human history and society from the origins of civilization in Sumer to the modern world; the lectures will cover all the periods and areas of history and involve the participation of the entire department; a perfect introduction to history and the history faculty.

**123. Races: Iberia and the Americas. (3)** Bakewell, Conniff, Kern
Development of Spanish and Portuguese culture from their origins through the development of the Iberian cultures in the Americas. The approach is mainly historical, but art, music and literature are included and related to the evolution of society, politics and economics.

**150. Introduction to Latin America. (3)**
(Also offered as Latin Am St, Soc, Pol Sci, Modern Languages 150.) This is an inter-disciplinary introduction to the geography, culture, economy, literature, society, politics, history, and international relations of the region. A lecture by faculty members from different departments will be followed by a discussion section each week.
No prerequisites.

**161-162. History of the United States. (3, 3)** Dabney, Kolchin, Nash, Pugach, Rabinowitz, Roberts, Szasz
Survey of the economics, political, intellectual, and social development of the United States, including the place of the U.S. in world affairs. 161—from 1607 to 1877; 162—from 1877 to the present. {Summer, Fall, Spring}

**163-164. History of the United States (3, 3)** Dabney, Kolchin, Nash, Pugach, Rabinowitz, Roberts, Szasz
Survey of the economic, political, intellectual, and social development of the United States, including the place of the U.S. in world affairs. 163—from 1607 to 1877; 164—from 1877 to the present. For students with ACT scores of 25 or higher.

**220. Studies in History. (1-3)‡** Staff
This course will vary from instructor to instructor but will offer a review of particular historical issues designed for the non-specialist. For content of particular courses, see schedule of clases and contact Department. {Fall, Spring}

**251. Traditional Eastern Civilizations. (3)** Iklé, Porter
The orgin and development of the traditional societies and cultures of Indian, Southeast Asia, China, and Japan.

**252. Modern Eastern Civilizations. (3)** Iklé, Porter
The emergence of modern Asia from the impact of western colonialism and imperialism to nationalism, modernization and revolution.

**§260. History of New Mexico. (3)**
Survey from Cabeza de Vaca to 1912.

**280. The United States-Mexico Border. (3)** Maciel
Traces the historical, socio-economic and cultural development of the border states in the U.S. and Mexico from 1848 to the present. {Fall}

**281. History of Colonial Latin America. (3)** Bakewell
From 1492-1821. Outlines the high culture of pre-Conquest Middle and South America—Maya, Aztec, Inca— and the history of Spain and Portugal to 1500; features of Latin American history from the rediscovery of America by Columbus in 1492 to the final achievement of independence in 1824. {Fall}

§ May be taught off-campus centers.

**282. Modern Latin American History. (3)** Conniff, Lieuwen
Surveys the nations of Latin America from their independence until the present. Emphasizes the process of nation-building, governance, socio-economic integration, and coping with modernization. Special attention given to great leaders of Latin America. {Spring}

**283. La Raza: A History of Mexican-Americans. (3)** Maciel
An understanding of the Chicano in our society; the course is an examination of history and culture.

***301. History of the Jewish People to 1492. (3)** Pugach
Survey of Jewish history in Ancient and Medieval times, stressing major religious, intellectual, political and social developments. Course traces the transformation of the Hebrews into the Jews and Israelite religion into Judaism. Highlights the Rabinic era and the diaspora experience in the Islamic and Christian worlds. {Fall 1982}

***302. [337.]Modern History of the Jewish People. [History of the Jewish People.](3)** Pugach
Survey in ethnic history stressing political, religious, and social developments from the expulsion from Spain (1492) to the present. Course concentrates on European Jewry but will include consideration of American Jewish community, modern anti-semitism, and rise of the state of Israel. {Spring 1983}

***303. History of World Communism. (3)** Kern
From Marx to the present.

**304. Revolution in History. (3)** Porter, Robbins, Steen
Examination of revolution and the revolutionary process in the modern world. Emphasizes the experience of France, Russia, and China.

***305. [329.]History of Christianity to 1517. [History of Christianity.](3)**
The history of Christianity from its beginnings in Palestine to the eve of the Protestant Reformation. Primary focus will be on the rich variety of forms—doctrinal, liturgical and institutional—that Christianity assumed through the Medieval centuries. Also of concern will be its contributions and significance as a civilizing force. {Fall}

***306. History of Christianity, 1517 to Present. (3)** Skabelund, Sullivan
The development of Christianity from the Protestant Reformation into the modern world, including biography, doctrine, liturgy, institutions and religious practice, together with the interaction of Christianity with society at large. {Spring}

***308. Modern European Society. (3)** Roebuck
Evolution of society from the agrarian eighteenth to the industrial twentieth century. Changes in the living and working conditions of the major social groups necessitated by advances in agriculture, industry, and commerce will be studied. Focus will be on the response of the major social groups to the challenge of this turbulent era and on the major social problems of modern Europe.

**309. Historiography. (3)** Dabney, Kern, Kramer, Spidle
Development of historical thought and writing. {Summer, Fall}

***310. International Labor History. (3)** Kern
The history of labor in Europe, the United States, and Latin America from 1835 to the present; a look at a variety of trade unions, such as the Grand National, the unions of the First and Second Internationals, syndicalism, and modern variants.

***311. The Ancient Near East. (3)** Berthold
A political and social survey of civilization in Egypt and Mesopotamia from its birth in Sumer in the fourth millennium to the destruction of the Achaemenid Persian empire by Alexander.

***313. Greece. (3)** Berthold
A political and social survey of the Greek people from the Mycenaean world through the long autumn of Hellenistic age and the arrival of the Romans.

***314. Rome. (3)** Berthold
A political and social survey of the Roman people from their origins on the Tiber through the glories of Empire to the final collapse of classical society in the sixth century.

***315. History of Women from Ancient Times to the Enlightenment. (3)** Slaughter
Study of sex roles in primitive societies, classic views of women, the Judeo-Christian treatment of women, medieval social roles, and the changes that came with the Renaissance and Reformation. Attention will be paid to the role o women in the family and to their economic function as we as to the less common activities of saint, witch, an revolutionary.

***316. Women in the Modern World. (3)** Slaughter
Study of western women from pre-industrial to contempo rary society which will focus on Victorianism, familial roles changes in work patterns, feminist movements, and fema participation in fascist and revolutionary politics.

***317. History of Science to 1543. (3)** Skabelund
The history of science, mainly internal, from ancient Bab Ionia and Egypt through the European Renaissance.

***318. History of Science, 1543-1800. (3)** Skabelund
The history of science, mainly internal, during the Scientif Revolution of the sixteenth and seventeenth centuries ar the eighteenth-century Enlightenment.

***319. History of Science, 1800 to the Present. (3** Skabelund
History of science, mainly internal, during the "classica period of the nineteenth century and the "second scientif revolution" of the twentieth.

***320. Studies in History. (1-3)** Staff
Will vary from instructor to instructor, but will be an i depth analysis of specific historical problems. For cour content consult Schedule of Classes.

***321. Early Middle Ages, 300 to 1050. (3)** Sullivan
The emergence of medieval European civilization from t reign of Constantine to the beginnings of the pap monarchy.
Prerequisite: 101.

***322. The High Middle Ages. (3)** Sullivan
The maturing of medieval civilization; Gregorian reform, t Crusades, the rise of the university, and the Gotl cathedral.

***323. Renaissance Era, 1300 to 1520. (3)** Sullivan
The decline of medieval civilization and the transition tc new phase of European history.

***325. Reformation Era, 1500-1600. (3)** Sullivan
Religious revolution and concurrent developments in Eu pean politics, society, and culture.

***326. History of the Occult and Irrational. (3)** Skabelun
Mystical traditions in Western history; the other side rationalism, the "fossil" sciences, the preternatural-l glected episodes in Western civilizations.

***327. Technical Factors in History. (3)** Skabelund
Picks up topics commonly omitted from other courses: environmental, technological, and scientific factors in h tory, mostly Western, from antiquity to the present.

***328. Modern France since 1815. (3)** Kramer
The development of French society and culture since French Revolution.

***330. History of the Women's Rights Movement.** Slaughter
A detailed study of the movements for women's rights the U.S. and in Europe in the nineteenth and twent centuries. The topics approach will emphasize the mc ment's relation to and impact on broader historical qu tions, e.g., feminism and socialism, feminism and W War I. Student involvement in discussion and project pi entations is required.

***331. Europe in the Seventeenth Century. (3)** Steen
Survey of political, cultural, social, and economic trend Europe during Thirty Years War and reign of Louis Special emphasis on developments in England. France, Hapsburg dominions.

***332. Europe in the Eighteenth Century, 1700-1788.** Steen
Survey of the political, cultural, social, and economic s ation in Europe at height of Old Regime. Emphasis wil on intellectual and social developments that culminate French Revolution.

***333. The French Revolution and Napoleon, 1789-1 (3)** Steen
Survey of the course of the revolution and its impac France and on European social, political, economic, military life.

***334. Modern Europe, 1815-1890. (3)** Kern
Restorations and revolutions, nationalism, unification industrialism; the "generation of materialism."

**335. Modern Europe, 1890-1939. (3)** Kern, Roebuck, Kramer
The origins of World War I, World War II and the search for peace.

**336. Europe since 1939. (3)** Kramer
Study of the transformation of Europe after World War II as experienced on the political, economic, social and cultural level.

**338. The City in History. (3)** Roebuck
(Also offered as Arch and Soc 338.) Overview of development of urban forms, throughout history, with emphasis on modern times, which examines the causes of urban growth and change and ways in which cities have affected course of development of Western society.

**340. Military History of Modern Europe. (3)** Roberts

**341. Medieval France to 1559. (3)** Steen
Study of the evolution of French social, political, and religious institutions from Roman times to outbreak of the Wars of Religion.

**342. Baroque France, 1560-1815** [France in Early Modern Times, 1560-1815.]**(3)**
Study of creation of France as modern state with emphasis on social and political developments that led to French Revolution.

**343. History of England to 1688. (3)** Roebuck
Survey of medieval foundations, Tudor era, and seventeenth-century social and political revolutions.

**344. History of Modern England since 1688. (3)** Roebuck
Emphasis on social, political, and intellectual developments.

**345. The British Empire and Commonwealth. (3)** Roebuck
Survey of British colonial policy and nation-building since 1815. Emphasis on Ireland, Canada, Australia, India, and South Africa.

**346. The History of Italy 1815-Present. (3)**
Severs response to Napoleon's fall, rise of a nationalist movement, successful unification of Italy (Risorgimento), problems facing the new state, the background of entrance to World War I, and the attempt to establish a democratic Italian nation in post-war era. Emphasis placed on cultural and intellectual themes of these periods.

**347. Old Russia from the Ninth to the Seventeenth Century.(3)** Robbins
Survey of the Kievan, Mongol, and Muscovite periods. Emphasis on political and social developments.

**348. Romanov Russia to 1855. (3)** Robbins
From the Time of Troubles to the death of Nicholas I. Stresses the development of political institutions and the origins of the revolutionary movement.

**349. Russia in the Era of Reform and Revolution: 1855 to Present. (3)** Robbins
From the Great Reforms of the 1860s to the fall of Khrushchev. Emphasis on political and social changes.

**350. Traditional China. (3)** Porter
Emergence and development of Chinese civilization to its height in the thirteenth century, including cultural, political, social, and economic themes.

**351. Early Modern China. (3)** Porter
The development of early modern society and the impact of the West from the thirteenth to the twentieth century.

**352. History of Japan. (3)** Iklé
Social, political, and economic institutions from historical beginnings to modern times.

**353. Southeast Asia. (3)** Iklé, Porter
The civilization, the impact of colonialism and nationalism to the present.

**354. Diplomatic History of East Asia. (3)** Iklé
Emphasis upon diplomatic relations between Asia and the West.

**355. Revolutionary China. (3)** Porter
Political, social, economic and cultural history of China in the revolutionary period from 1911 to the present.

**356. History of the Near East. (3).** Iklé
From ancient Mesopotamia to the present.

**357. History of Africa since 1800. (3)** Spidle
Survey of the African continent during colonial and national periods.

***358. Traditional India. (3)**
Survey of Indian history and civilization from the historical beginning to the Mughal period.

***359. Modern India. (3)**
Survey of modern India from the rise of the Mughals to the present.

***360. History of New Mexico. (3)** Cutter, Ellis
Survey from Cabeza de Vaca to the present.

***361. American Urban History to 1870. (3)** Rabinowitz
Study of urban America from colonial times to 1870, emphasizing the growth of pre-industrial and early industrial cities and their impact upon the development of the United States.

***362. American Urban History since 1870. (3)** Rabinowitz
Continuation of 361, emphasizing the emergence, development, and role of the modern city.

***363. The Old South. (3)** Kolchin
The South from the beginning of colonization to the outbreak of the Civil War. Emphasis on slavery and its impact on southern society.

***364. Political History of the United States. (3)** Roberts
Study of American politics from 1787 to the present. Emphasis on national politics with special attention to the presidency and changes in the political systems.

***366. Blacks in Urban America. (3)** Rabinowitz
Interdisciplinary examination of the transformation of America's blacks from a rural to a predominantly urban people. Special emphasis given to the post-Civil War period.

***367. The Federal Era, 1789-1837.** [Creation and Expansion of the American Nation, 1783-1821.]**(3)** Dabney
Study of the impact of the American Revolution on the post-war society, the creation of the new nation, crises of the 1790s. orgin or modern political parties, Jeffersonian America, the War of 1812, and the movement westward.

***368. New South Since 1865. (3)** Rabinowitz
Emphasis on the social, political and economic aspect of reconstruction and the first New South, progressivism, race relations, the New Deal, civil rights movement, Southern culture and contemporary politics as they affect the region and the nation. {Spring}

***369. American Indian History. (3)** Ellis
Survey of American Indian history from white contact to the present.

***370-371. American Diplomacy. (3, 3)** Pugach
Diplomatic history of the United States from independence to 1898; from the Spanish-American War to the present.

***373. History of the American Frontier. (3)** Ellis
Anglo-American expansion from the seventeenth century to the 1890s.

***374. The Trans-Mississippi West. (3)** Ellis

***375. Military History of the United States. (3-4)** Roberts
Survey of U.S. military and naval history from colonial times to present, with emphasis upon technological, managerial, and political developments that have affected the armed services.

***376. History of American Economic Growth.** [Economic History of the United States.]**(3)** Nash
A survey of the extraordinary expansion of the American economy from colonial beginnings to the present day including consideration of technology, business, labor, agriculture, and environmental changes.

***378. Constitutional History of the United States. (3)** Dabney
The American Constitution from English origins through the Civil War and Reconstruction. The continuing effort to fashion a frame of government broad enough to embrace diverse peoples of different races, religious, national origins and value systems.

***379. Constitutional History of the United States. (3)** Dabney
Sequel to Hist 378. A century-long struggle to resolve the conflicting liberties of the people and requirements of an ordered society. Examination of the occasional collisions of the cherished rights of property and personal freedom.

***380. History of the Southwest, Spanish Period. (3)** Cutter
Spanish exploration and occupation of the Southwest; colonial government and missions.

***381. History of the Southwest, Mexican and American Period. (3)**
Historical survey of the American Southwest covering the period from the first entrance of the Anglo-Americans during the Mexican era to the present.

***383. Society and Development in Latin America, 1492-Present. (3)** Bakewell, Conniff
Overview of social and economic trends in Latin America, stressing labor systems, social structure, trade, demography, and industrialization.

***384. Inter-American Relations. (3)** Conniff
Relations among the American nations since 1810, and with other world powers. Stresses U.S. role in the region after 1900, as well as tendencies to curb that influence. Guerilla warfare, revolutionary networks, and Third World idiology covered.

***385. The American West in the Twentieth Century. (3)** Nash
This course surveys the growth of the trans-Mississippi West in the twentieth century, giving attention to social development, economic growth, cultural development, the role of minority groups, and the impact of science and technology.

**387. Blacks in Latin America. (3)**
Survey of the history and assimilated culture of the black man in Latin America since colonial times.

***389-390. Latin American Philosophy. (3, 3)**
(Also offered as Soc, Phil 389-390.) 380—pre Columbian thought through independence ideoologies. 390—positivism through contemporary thought.

***393. Spanish South America to 1824. (3)** Bakewell
The native cultures in pre-Conquest times; the conquest of the Incas and the colonial settlement of the remainder of Spanish South America; economic, social and cultural developments of colonial times, concentrating on the central Andean region, but with accounts of varying development in other areas; the origins and accomplishment of independence in the early 19th century.

***395. Spain and Portugal to 1700. (3)** Kern
Spanish and Portuguese history to 1700.

***396. Spain and Portugal since 1700. (3)** Kern
Spanish and Portuguese history since 1700.

***397. Mexico to 1821. (3)** Bakewell
Origins of native Mexican civilization; high cultures-Maya, Toltec, Aztec; Spain and the Spanish conquest of Mexico; colonial life, government, achievements; Independence of Mexico.

***398. Mexico since 1821. (3)** Lieuwen

***399. Contemporary Mexico: 1940 to the Present. (3)** Maciel
Mexico's growth development and crisis in recent times. Cultural trends, societal growth, economic development, political structures, international relations.

***401. Quantification in History. (3)**
Introduction to statistics and computer analysis for historians. Emphasis on ability to read and criticize quantitative studies by historians. No prior knowledge of statistics or higher mathematics required.

***410. The Historian and the Museum. (3)**
Theory and practice in the administration and utilization of the historical museum, with attention to acquisitions, funding, exhibitions, and promulgation of information. This course does not give credit toward minimum requirements for Ph.D.

***411. Archival Administration for Historians. (3)**
An introduction into the nature of archival administration, problems of archival work, and relations between archivists and historians.

***412. Introduction to Editing Historical Journals. (3)** Cutter
Nature and problems of editing historical journals. Appraisal, evaluation, revision, and preparation for publication, including practical experience.

***428. European Intellectual History, Enlightenment to 1860. (3)** Kramer
The Enlightenment synthesis: Romanticism, positivism, socialism, liberalism; Voltaire, DeSade, Rousseau, Burke, Herder, Kant, Comte, Mill, Darwin, Marx.

***429. European Intellectual History, 1860 to the Present. (3)** McClelland
The anti-positivist reaction; the decandent period and the crisis in values, scientific revolution; existentialism; Dostoevski, Nietzsche, Heinsenberg, Freud, Bergson, Kierkegaard, Sarte, Buber.

***438. European Diplomatic History. (3)** Spidle
Since 1815.

***442. Germany, 1871 to 1971. (3)** McClelland
Bismarck to Brandt, a survey of German history from unification to contemporary times, with special emphasis on Weimar and Hitlerian Germany.

***443. Modern Eastern Europe. (3)** McClelland

***450. Christians and Spices: The Western Impact on Asia. (3)** Porter
The era of European expansion in Asia from Vasco da Gama to circa 1900; sources of European expansion, the early struggles and conquests, colonial systems, and imperialism.

***453. Inter-Disciplinary Asian Studies. (3)**
(Also offered as Phil, Geog, Pol Sc 453.) Cross-cultural and interdisciplinary investigations of problems and methodologies current in Asian Studies.

**456. Islam. (3)**
A study of Islamic civilzation—its ideological, cultural, political and socio-economic development from the 7th century to the present.

***461. The American Colonies, 1607-1763. (3)** Dabney
The settlement of English America. The transference of institutions and attitudes from Britain, Europe, and Africa to North America, and what happened to them when they encountered the new environment and the native population.

***462. The American Revolution. 1763-1789. (3)** Dabney
The separation of British America from the mother country: why it was undertaken, how it was achieved, what its significance was. The effort to gather a scattered and diverse people under one constitutional government.

***465. The Era of Sectional Conflict, 1820 to 1860. (3)** Kolchin
The impact of nationalism and sectionalism upon American life from the Missouri Compromise to the election of Lincoln.

***466. The Civil War Era. (3)** Kolchin
The United States from 1848 to 1868. Topics covered include slavery, anti-slavery, and the coming of the Civil War; social, political, and economic aspects of the war; emancipation and Reconstruction.

***467. United States in the Gilded Age, 1865-1900. (3)** Rabinowitz
Emphasizes changes in society in terms of impact on Americans at the time and legacy to the 20th century. Includes Reconstruction, immigration, industrialization, urbanization, and America's rise to the world power.

***468. Twentieth Century America, 1898-1932. (3)** Nash
From 1898 to the time of the great depression.

***469. Twentieth Century America, 1932-Present. (3)** Nash
From the time of the great depression to the present.

***470. Philosophy of History. (3)**
(Also offered as Phil 470.) Nature, structure, and presuppositions of history and historical methods.

***475. American Culture and Society, 1607-1860. (3)** Szasz

***476. American Culture and Society since 1860. (3)** Szasz

***481. The Modernization of South America. (2-3)** Lieuwen
Economic development, social change, and political crises since 1850.

***482. The Mexican Revolution. (2-3)** Lieuwen
Emphasis upon theory and interpretation. 3 hrs. credit with term paper.

***483. Twentieth-Century Social Revolutions in Latin America. (2-3)** Lieuwen
3 hrs. credit with term paper.

***484. The Cuban Revolution, 1959 to Present. (3)** Valdes
(Also offered as Soc 484.) Background to revolution since 1898; emphasis on period since 1959.

***485. Intellectual History of Latin America. (3)** Lieuwen

***486. Southern South America. (3)** Conniff
Argentina, Chile, Uruguay, and Paraguay from colonization to the present. Most emphasis on late 19th and 20th centuries, when these nations led the region's development. Deals with the rise of the export economies, populist movements, militarism, and socio-economic stagnation.

***488. The Andean Republics. (3)** Bakewell, Conniff
Peru, Bolivia, and Ecuador from the early 19th century to the present. Politics, society, economy. Hist 282 is a desirable preparation for this course. Reading knowledge of Spanish advantageous.

***489. Brazil, 1500 to the Present. (3)** Conniff
A survey of Latin America's largest and most populous country from colonial times to the present, with stress on the development of a multiracial society and a dynamic economy. Major themes are the Golden Age, the Bragance Empire, the Populist Era, and the Future World Power.

***491. Internship. (3-9)** Staff
This course provides a supervised work experience in the practical application of historical skills. Training for interns is provided in various fields such as museum work, archival management, and historical editing. It does not give credit toward minimum requirments for the Ph.D.

**493. Reading and Research in Honors. (3)**
Prerequisite: permission of major adviser.

**494. Senior Thesis. (3)**
Prerequisite: 493

**495. Undergraduate Honors Colloquium. (3)**
Prerequisite: permission of instructor.

**496. Undergraduate Readings in History. (1-3)‡**
Permission of instructor required before registering. Department requirements provide that the following seminars may be repeated only once.

***500. Seminar in Historical Research Methods. (3)** Cutter, McClelland, Nash, Porter, Szasz

***504. Seminar in Ibero-American Studies. (3)†** Herron, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Ib-Am, Port and Span 504.)

***520. Seminar and Studies in Ancient History. (3)** Berthold

***521. Seminar and Studies in Medieval History. (3)** Sullivan

***526. Seminar in European Economic History. (3)**
(Also offered as Econ 526.)

***532. Seminar and Studies in Early Modern European History. (3)** Steen

***537. Seminar in European Imperialism. (3)** Spidle

***540. Seminar and Studies in European Intellectual History. (3)** McClelland

***542. Seminar and Studies in Modern European History. (3)** McClelland

***544. Seminar in the History of Women. (3)** Slaughter

***545. Seminar and Studies in British History. (3)** Roebuck

***547. Seminar and Studies in Modern Russian History. (3)** Robbins

***548. Seminar and Studies in Iberian History. (3)** Kern

****549. History Education. (3)** Zepper
(Also offered as SATE 549.)

****550. Seminar in History Education. (3)**
(Also offered as SATE 550.)
Prerequisite: 549.

***551-552. Problems. (1-3, 1-3 hrs. semester)**

***554. Seminar and Studies in Far Eastern History. (3)** Iklé, Porter

***555. Interdisciplinary Seminar: Asia. (3)**
(Also offered as Geog, Pol Sci 555.)

***562. Seminar and Studies in Early American History. (3)** Dabney
Pre- or corequisite: 462.

***563. Seminar and Studies in U.S. Urban History. (** Rabinowitz

***564. Seminar and Studies in American Intellectual a Social History. (3)** Szasz

***566. Seminar and Studies in Civil War Period. (3)** Kolch

***568. Seminar and Studies in Recent American Histo (3)** Nash

***570. Seminar and Studies in United States Diploma History. (3)** Pugach

***573. Seminar in American Western History. (3)** Ellis

***574. Seminar in American Indian History. (3)** Ellis

***579. Seminar in Southwest History. (3)** Cutter

***581. Seminar in Colonial Latin American History. (** Bakewell

***582. Seminar in Recent Latin American History.** Lieuwen

***584. Interdisciplinary Seminar on Problems of Moder zation in Latin America. (3)** Lieuwen, Merkx, Needl Schwerin
(Also offered as Econ, Pol Sci, and Soc 584.)

***589. Seminar and Studies in Brazilian History.** Conniff
(Also offered as Ib-Am 504.)

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total cr requirements.

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total cr requirements.

## HOME ECONOMICS

See Education, Home Economics.

## IBERO-AMERICAN STUDIES

Marshall R. Nason, Director
Ortega Hall 423, 277-5404

**PROFESSOR:**

Marshall R. Nason, Ph.D., University of Chicago.

Explanation of footnotes not indicated will be foun on p. 78.

An interdepartmental program in the languages, literature, and history of Spanish America and Bra leading to the degree of Doctor of Philosophy. For details, consult the Graduate Programs Bulletin.

***504. Seminar in Ibero-American Studies. (3)‡** Bake Conniff, T. Holzapfel, Lieuwen, Nason, Tolman, Tomlins
(Also offered as Portuguese, Spanish 504, Hist 504 589.) {Fall, Spring}

***584. Interdisciplinary Seminar on Problems of Mod zation in Latin America. (3)‡**
Lieuwen, Merkx, Needler, Schwerin
(See Econ, Hist, Pol Sci, and Soc 584.) {Spring}

***651-652. Problems. (1-3, 1-3 hrs. per semester)**
***699. Dissertation. (3-12 hrs. per semester)** Bake Conniff, Cutter, Gerdes, T. Holzapfel, Lieuwen, Nason man, Tomlins, Ulibarri
See the Graduate Programs Bulletin for total credit re ments.

## INDUSTRIAL EDUCATION

See Education, Secondary.

## ITALIAN

See Modern and Classical Languages.

## JOURNALISM

Robert H. Lawrence, Chairperson
Journalism 208, 277-2326

**PROFESSORS:**

Frederick V. Bales, Ph.D., University of Texas
Anthony G. Hillerman, M.A., University of New Mexico

**ASSOCIATE PROFESSOR:**

Charles K. Coates, B.A., University of Virginia
Robert H. Lawrence, M.A., University of New Mexico

**ASSISTANT PROFESSORS:**

Burt Wittrup, B.A., University of New Mexico

**MAJOR STUDY**
Advertising students are encouraged to consider a joint M.B.A. program, combining journalism and appropriate business courses. Consult adviser.
News-editorial sequence: 33 hours, including 251, 252, 301, 311, 312, 322, 375, 475, 494.
Television-radio sequence: 33 hours, including 251, 270, 271, 301, 322, 340, 341, 470, 494.
Note: No more than 33 hours of journalism without special permission.

**MINOR STUDY**
21 hours, including 251, 252, 311, 375 or 340.

**101. [100.]Introduction to Mass Communication. (3)**
The meaning of mass media in society, with emphasis on their processes and effects. Does not count toward major.

**110. The Evolution of Television. (3)**
Also offered as Sp Com, TA 110.) Development of television in the areas of news, performing arts, ethnics, taste, technology, and as industry. Social, cultural, and political impact of television on contemporary America, western civilization, and the world. Does not count toward a major. {Spring, Fall}

**111. Technical Introduction to Television. (3)**
A technical introduction to the operation of the television equipment encountered on this campus and, to the degree possible, in commercial operations. Includes basic electronics and optics as well as studio operations. Culminates in demonstration tape. Does not count toward a major. Prerequisite or corequisite: TA, Journ, Sp Com 110.

**251. News Writing and Reporting I. (3)**
Emphasis on news elements, writing techniques, and story structure. A strong command of language and typing skills recommended. Open to students with 24 hours of university credit or declared journalism majors with 15 hours university credit and a GPA of 2.0, who have passed CST. {Summer, Fall, Spring}

**252. News Writing and Reporting II. (3)** Staff
Continuation of 251 with stronger emphasis on gathering of information, reporting methods and advanced writing skills for the media.
Prerequisite: completion of 251 with grade of C or higher. {Fall, Spring}

**253. Newspaper Practice. (1)‡** Staff
Open to staff members of *The Lobo*. May be taken three times. {Fall, Spring}

**254. Broadcast Practice. (1)‡** Coates
Open to staff members of KUNM-FM. May be taken three times. {Fall, Spring}

**261. News Photography. (3)** Lawrence
Camera and darkroom techniques for newspapers and magazines; editing of photos, including preparation of cutlines; production of all varieties of photos for publication, including photo stories.
Prerequisites: 251 and permission of instructor. Journalism majors given preference. {Summer, Fall, Spring}

**270. Introduction to Broadcast Journalism. (3)**
Writing news for the ear and writing to film and videotape. Familiarization with broadcast services of AP and UPI. Study of formats for radio and television reporting and news programs.
Prerequisites: 110 or permission of instructor, with 251 a prerequisite. {Fall, Spring}

**271. Broadcast News Reporting. (3)** Staff
Reporting for radio and television. Includes practice in on-air delivery and use of tape recorders and sound mixing and editing facilities; reporting with pictures, including fundamentals of shooting and editing videotape and 16mm film.
Prerequisite: 270, 251 with grade of C or higher. {Fall, Spring}

**277. Graphic Design. (3)**
(Also offered as Art St 277.) Graphic design in communication.
Prerequisite: Art St 123. {Fall}

**301. History of Journalism in the United States. (3)** Lawrence
American journalism from the pre-colonial beginnings through modern times.
Prerequisite: permission of instructor. {Fall}

**302. Persuasive Writing. (3)** Hillerman
Writing the editorial essay, the column, and other interpretive matters.
Prerequisites: 252 and permission of instructor. {Spring}

**311. Copy-Editing and Makeup I. (3)** Bales
Practice in editing and assembling news copy, headline writing, typography and page makeup.
Prerequisite: completion of 252 with grade of C or higher. 2 lectures, 2 hrs. lab. {Fall, Spring}

**312. Copy-Editing and Makeup II. (3)** Staff
Continuation of 311, with emphasis on wire copy, typography and newspaper design and analysis.
Prerequisites: 311, with grade of C or higher, and permission of instructor. 2 lectures, 2 hrs. lab. {Fall, Spring}

**322. Law of the Press. (3)** Staff
Rights of the press; libel and defenses; contempt, invasion of privacy; copyright, advertising controls; broadcasting and the Federal Communications Commission. The legal controls.
Prerequisite: permission of instructor. {Spring}

**332. Writing the Magazine Article. (3)** Arquette
How to write and sell non-fiction and fiction to magazine today.
Prerequisite: permission of instructor. {Fall}

**340. Broadcast News Programs. (3)** Staff
Practice in editorial aspects of producing radio and television news programs, with emphasis on television. Students organize, write, edit and anchor news programs, including original portapack news reports.
Prerequisite: 271 with grade of C or higher. {Fall, Spring}

**341. Television News Programs. (3)** Staff
Continuation of 340, with practice in regular production of longer and more elaborate news programs and reports and an introduction to the newsroom duties of assignment editors and news and feature editors.
Prerequisite: 340 with a grade of C or higher. {Fall, Spring}

**361. Photojournalism II. (3)** Staff
Continues 261 with greater emphasis on camera reporting, weekly news assignments, scaling photos for reproduction, advanced black and white darkroom techniques, color film development. For majors only.
Prerequisite: Permission of instructor. {Spring}

**375. Intermediate Reporting. (3)** Staff
Emphasis on reporting complex affairs, the news feature story, developing and covering beats and specialized interests.
Prerequisite: 252 with grade of C or higher. {Fall, Spring}

**399. Practicum in Journalism. (3)** Staff
Supervised internship with a medium of mass communications.
Prerequisites: permission of instructor and 9 hours of journalism, including 375 for print media, 340 for radio, 341 for television broadcasting, and 401 for advertising. May be repeated for total of 6 hours. {Fall, Spring}

***401. Advertising. (3)** Toppino
Theory, strategy, and techniques of advertising and advertising campaigns.
Prerequisite: permission of instructor. 2 lectures, 2 hrs. lab. {Fall}

***402. Advertising Campaigns. (3)** Toppino
Theory, strategy, and techniques applied to advertising campaigns.
Prerequisite: 401 or permission of instructor. {Spring}

**405. Public Affairs Programming. (3)** Staff
Practice in interviewing techniques, researching of topics and personalities, production of panel-interview programs, and scrutiny of local public affairs programs.
Prerequisite: 341 with grade of C or better.

**406. Special Programming. (3)** Staff
Practice in remote, live programming, including surveying of locations, planning, reporting, anchoring, continuity writing, and preparation of prerecorded materials for such programs.
Prerequisite: 341 with a grade of C or better.

***465. Management of High School Publications. (3)**
A survey of the problems in production of high school newspapers and yearbooks, as well as some incidental publications, including approaches to design, advertising content, the news and editorials, circulation and printing, and overall business administration and staff management. Not open to journalism majors. {Offered upon demand}

**469. Media Management. (3)** Staff
The functions of management in the communications field, with emphasis on departmental problems, laws, personnel, and changing technology.
Prerequisites: 312 and 322. {Offered upon demand}

**470. News Documentaries. (3)** Coates
Reporting, writing, narrating and production of radio documentaries and reporting, writing, narrating, shooting and editing of television news series reports and documentary segments.
Prerequisite: 341 with grade of C or higher. {Spring}

**475. Advanced Reporting. (3)** Staff
Interpretive reporting of public affairs with emphasis on investigation of subject matter, presentation, and publication.
Prerequisites: 375 with grade of C or higher and senior standing. {Fall, Spring}

**494. Mass Media as a Social Force. (3)** Hillerman
The power and the problems of the communications media with emphasis on evolving ethical standards. {Fall, Spring}

***496. Individual Study. (1-3 per semester, to a maximum of 6)**

**499. Public Affairs Seminar. (3)** Staff
Study and discussion of domestic and foreign news developments; in-depth examination of government policies and operations and international affairs that are prominent in the news; backgrounders to today's headlines, with reference to coverage of public affairs news.
Prerequisites: senior standing and permission of instructor. {Offered upon demand}

# LATIN

See Modern and Classical Languages.

# LATIN AMERICAN STUDIES

Nelson P. Valdés, Associate Director
Latin American Institute, 801 Yale N.E., 277-3243

**PROFESSORS:**

Philip K. Bock, Anthropology
Sanford Cohen, Economics
Pedro David, Sociology
Peter Gregory, Economics
Ferrel Heady, Public Administration
Tamara Holzapfel, Modern Language
Robert A. Lenberg, Management
Edwin L. Lieuwen, History
Marshall R. Nason, Modern Languages
Martin C. Needler, Political Science
Jeremy Sabloff, Anthropology
Karl Schwerin, Anthropology
Mary Elizabeth Smith, Art History
Frederick Sturm, Philosophy

**ASSOCIATE PROFESSORS:**

Peter Bakewell, History
Elinore M. Barrett, Geography
Richard Barrett, Anthropology
Garland Bills, Linguistics
Matthieu Casalis, Philosophy
Michael Conniff, History
Linda S. Cordell, Anthropology
Dick C. Gerdes, Modern Languages
Robert W. Kern, History
David Maciel, History
Gilbert W. Merkx, Sociology
James L. Ray, Political Science
Karen Remmer, Political Science
Robert Santley, Anthropology
Donald Tailby, Economics

Jon Tolman, Modern Languages
Nelson P. Valdés, Sociology
John A. Yeakel, Management

**ASSISTANT PROFESSORS:**

June Carter, Modern Languages
Erlinda Gongales-Berry, Modern Languages
Mary Grizzard, Art
George Guess, Public Administration
Fernando Robles, Management

**INTERDISCIPLINARY COMMITTEE ON LATIN AMERICAN STUDIES**

Elinore M. Barrett, Geography
Michael Conniff, History
Peter Gregory, Economics
Robert A. Lenberg, Management
Marshall R. Nason, Modern & Classical Languages
Martin C. Needler, Political Science
Karen Remmer, Political Science
Karl H. Schwerin, Anthropology
Nelson R. Valdés, Sociology

This is an interdepartmental program academically supervised by the Interdisciplinary Committee on Latin American Studies, appointed by the Dean of Arts and Sciences; and administered by the Associate Director for Academic Programs of the Latin American Institute. The program provides a solid foundation in language skills and area competence that can be valuable in business, public service, or further professional training.

**MAJOR STUDY**

36 hours, including (1) Spanish 301-302, Portuguese 275-276 Latin American St 250, Hist 281-282, Pol Sc 355 or 356. The language course requiremnts may be waived if a student can demonstrate an equivalent proficiency in the languages to the Interdisciplinary Committee on Latin American Studies. If this requirement is waived, the student will take an equal number of credit hours of courses with Latin American content.
A listing and description of Latin American content courses currently being offered can be obtained from the Latin American Institute, 801 Yale N.E.

**DUAL MAJOR**

Under the "Three-Two" M.B.A. Program a student may take a dual major in Latin American studies and economics and continue for a M.B.A., completing the entire program in five years. Details are available at the Anderson School of Management or at the Latin American Institute.

**MINOR STUDY**

24 hours, including Spanish 301-302, Hist 281-282, Pol Sc 355 or 356 and 6 hours of Latin American electives. An equivalent number of hours of additional approved electives may be substituted for any of the required courses which the student is counting toward a major.

**DISTRIBUTED MINOR FOR LATIN AMERICAN STUDIES MAJOR**

In addition to a minor in a single department, Latin American Studies majors may offer a distributed minor of 30 hours of Latin American studies content courses numbered over 300 not counted toward the major.

**CURRICULUM**

**150. Introduction to Latin America. (3)** Black, Needler
(Also offered as History 150.) This is an inter-disciplinary introduction to the geography, culture, economy, literature society, politics, history, and international relations of the region. A lecture by faculty members from different departments will be followed by a discussion section each week. No prerequisites.

**250. Latin America Through Film. (3)** Merkx, Remmer
(Also Offered as Soc and Pol Sc 250.) Interdisciplinary introduction to Latin American studies through documentary films, lectures, reading discussion.

**355. Latin American Politics and Society. (3)** Needler
(Also offered as Soc and Pol Sc 355.)

**497. Independent Studies [498.] [Individual Reading and Research.] (1-3 Maximum of 6)**
Prerequisite: permission of department chairperson. For undergraduates only.

***525. Proseminar in Latin American Politics and Society. (3)** Needler
(Also offered as Soc and Pol Sc 525.)

***551-552. Problems. (1-3, 1-3 hrs. each semester)**
***584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3)** Lieuwen, Merkx, Needler
(See Econ, Hist, Pol Sci, and Soc 584.)

***599. Masters Thesis. (1-6 hrs. per semester)**

# LAW

Robert J. Desiderio, Dean
Bratton Hall 2016, 277-4700 and 2146.

**PROFESSORS:**

Robert J. Desiderio, J.D., Boston College
Charles T. DuMars, J.D., University of Arizona
Willis H. Ellis, J.D., Indiana University
Myron Fink, M.S. in L.S., Columbia University, LL.M., New York Law School (Law Librarian)
W. Garrett Flickinger, J.D., University of Michigan
Joseph Goldberg, LL.B., Boston College
Richard A. Gonzales, J.D., New York University
Frederick Michael Hart, LL.M., New York University
Ruth L. Kovnat, LL.B., Southern Methodist University
William T. MacPherson, Jr., J.D., University of New Mexico (Director, Clinical Law Program)
Pamela B. Minzner, LL.B., Harvard University
Hugh B. Muir, J.D., University of Michigan
Mario E. Occhialino, Jr., J.D., Georgetown University
Theodore Parnall, J.D., University of New Mexico
Leo M. Romero, LL.M., Georgetown University
Lee E. Teitelbaum, LL.M., Northwestern University
Albert E. Utton, M.A. (Juris), Oxford University (Editor, Natural Resources Journal)
Peter A. Winograd, LL.M., New York University (Associate Dean)

**ASSOCIATE PROFESSORS:**

Michael B. Browde, J.D., Georgetown University
James W. Ellis, J.D., University of California at Berkeley
Michele S. G. Hermann, LL.M., Harvard University
Jose L. Martinez, J.D., University of California at Berkeley
J. Michael Norwood, J.D., University of New Mexico
Robert L. Schwartz, J.D., Harvard University
Helene Simson, J.D., University of New Mexico
Luis G. Stelzner, J.D., University of California at Davis

**ASSISTANT PROFESSOR:**

Ann C. Scales, J.D., Harvard University

**RESEARCH PROFESSORS:**

C. Vance Mauney, LL.B., University of Michigan (Research Attorney, Institute of Public Law)
Gary O. O'Dowd, J.D., University of New Mexico (Director, Institute of Public Law & Services)

**LECTURERS:**

Andres D. DeAguero, J.D., Notre Dame University
Philip S. Deloria, J.D., Yale University (Director, American Indian Law Center and Special Scholarship Program in Law for American Indians)
Paul Nathanson, M.C.L., University of Chicago
Edwin E. Macy, J.D., University of New Mexico
Nancy M. Tuthill, J.D., University of New Mexico (Deputy Director, American Indian Law Center)

**PROFESSOR EMERITUS:**

Henry Weihofen, J.S.D., University of Chicago

**LAW**

**FIRST-YEAR COURSES**

**#500. Historical Introduction to the Legal System. (2)**

**#501. Introduction to Constitutional Law.** [Constitutional Law.]**(3, 4)**

**#502. Contracts. (4)**

**503. Law. (2)**

**#504. Criminal Law. (3)**

**506. Legal Writing. (2)**

**#508. Property I. (2, 3, 4)**

**#510. Torts. (3, 4)**

**#512. Civil Procedure I. (3)**

**#513. Advocacy. (4)**

**533. Family Law. (3)**

**575. Programmed Studies. (2)**

**ELECTIVES**

**505. Internation Law.** [Law of International Relations.]**(2,**

**516. Civil Procedure II. (3)**

**517. Trial Practice Workshop. (2, 3)**

**518. Administrative Law. (3)**

**520. Business Associations I. (3)**

**521. Business Associations II. (3)**

**523. Commercial Transactions II. (3)**

**524. Community Property. (1, 3)**

**525. Conflict of Laws. (3, 4)**

**526. Constitutional Rights.** [Constitutional Law II]**(3)**

**527. Business Planning. (3, 4)**

**528. Creditors' Rights. (3)**

**529. Criminal Procedure. (3)**

**530. Federal Estate and Gift Taxation. (2, 3)**

**531. Injunctions. (1, 2)**

**532. Evidence. (3, 4)**

**534. Federal Income Taxation. (3)**

**535. Advanced Problems in Federal Income Taxation. (**

**536. State and Local Taxation. (1)**

**537. Labor Law. (3)**

**538-539: Natural Resources Journal. (1, 1)**

**540. Mortgages. (1)**

**542. Legal Process. (3)**

**543. Family Law II. (2, 3)**

**544. Oil & Gas. (3)**

**545. Estate Planning. (2)**

**546. Antitrust. (2, 3)**

**547. Water Law. (3)**

**548. Legislation. (2)**

**549. Comparative Law. (2)**

**550. Unfair Trade Practices. (2)**

**551. Taxation of Corporations and Shareholders. (3)**

**552. Federal Jurisdiction. (3)**

**553. Products Liability. (2)**

**554. Wills and Future Interests. (3)**

**555. Jurisprudence. (2)**

**557. Wills and Trusts. (4)**

**558. Construction Law.** [Contracts III.]**(2, 3)**

**561. Arbitration. (3)**

**563. National Moot Court Competition. (2)**

**564. Consumer Law. (2)**

**565. Natural Resources. (1, 2, 3)**

**566. Law and the Behavioral Sciences. (3)**

**568-569. Natural Resources Journal. (1, 1)**

**572. Legal Profession. (2)**

**578. Land Transfers and Finance. (3)**

**580. Environmental Law. (3)**

**581. Insurance. (2)**

**594. Independent Research. (1, 2, 3)**

**600. Role of the Lawyer. (3)**

**603. Law and Economics. (2)**

**606. Civil Procedure II. (3, 4)**

**607. Selected Problems in Civil Procedure. (2)**

**608. Property II. (3)**

**609. Land Financing. (2)**

\# Required.

610. Landlord/Tenant. (1)
612. Real Estate Planning. (2)
613. Appellate Advocacy. (3)
614. Constitutional Torts. (2)
616. Community Land Grants. (2)
619. Mining Law. (3)
620. Federal Income Taxation of Trusts and Estates. (2)
621. Taxation of Natural Resources Transaction. (3)
622. Commercial Transactions I A. (1)
623. Commercial Transactions I B. (2)
624. Commercial Transactions I. (2, 3)
625. Supreme Court Decision-Making. (3)
626. Constitutional Problems. (2, 3)
629. Bankruptcy. (1)
630. Rights of Children. (3)
631. Remedies. (3)
632. Evidence—Trial Practice. (5)
634. Advanced Evidence. (3)
635. Land Use Planning. (2)
638-639; New Mexico Law Review. (1, 1)
645. Sex Discrimination Law. [Sex Roles in the Law.](2)
646. Private Pension Law. (1, 2)
654. Problems in Commercial Drafting. (2, 3)
655. First Amendment Rights. (2)
661. Fiduciary Administration. (2, 3)
663. Mental Health and Mental Retardation Law. (3)
664. Poverty Law. (3)
668-669. New Mexico Law Review. (1, 1)
671. Perspective in Tort Law. (1)
681. Client Counseling Competition. (1)
688. Legal Problems of the Elderly. (2, 3)
691. Patent Law. (2)
698. Advanced Real Estate Transactions. (3)
699. Wills Drafting. (2)

SEMINARS

674. Law and Social Change. (2)
676. State and Local Government. (2)
680. Women and the Law. (2)
687. Immigration Law. (2)
691. Law and Psychiatry. (2,3)
693. International Legal Problems. (2)
694. Indian Law. (2. 3)
701. Art Law. (2)
704. Federal/State Issues and Natural Resources Allocation. [Federal Issues in Natural Resources Allocation.](2)
708. Current Issues in Property Law. (2)
717. Employment Discrimination. (2)
718. Tribal Governments. [Tribal Courts and Tribal vernments.](2)
730. Juvenile - Law and Practice. (2)
735. Advanced Problems in Federal Litigation. (2)
737. Immigration Law. (2)
743. Development of Legal Institutions. (2)
753. Teaching Law to High School Students. (2)
757. Equal Employment Litigation. (2)
761. Natural Resources Policy. (2)
781. Problems in Indian Law. (2)
783. Indian Child Welfare Issues. (2)
791. Idea of the Legal System. (2)
690. Law and Medicine. (2, 3)
692. Introduction to the American Jury System. (2)
693. Journalism and the Law. (2)
694. Public Utilities. (2)
695. Recent Legal Developments Affecting Minorities. (2)
697. Comparative Criminal Law. (2)

CLINICAL PROGRAM.

700. Criminal Practice Clinic. (3)
701. Spanish for Lawyers. (1, 2)
702. Clinical Phase I. (1)
703. Lawyering Theory. (2)
704. Criminal Justice Seminar (Arraignment Intake). (3)
705. Litigation Ethics. (1, 2)
706. Advanced Litigation Program. (5, 6)
707. Tax Practice Clinic. (2, 3)
708. Applied Litigation Exercise. [Practical Problems I.](1, 2, 3)
709. Practical Prob II. (1-4)
710. Pre-Trial Practice. (2, 3)
711. Accounting for Lawyers. (1)
712. Elderly Legislation. (3)
713. Trial Practice. (2, 3)
714. Law Office Management. (3)
715. Interviewing and Counseling. (3)
716. Appellate Practice. (1, 2)
718. Negotiation. (1)
719. Prisoner Services. (3)
720. Law Office Intern. [Law Office and Public Defender](3-8)
721. Law Extern Program. [Law Office Intern.](3)
722. Legal Aid. (3)
723. District Attorney Program. (3)
725. Field Experience. (3)
726. U. S. Public Defender. (3)
727. J. A. G. (3)
728. Women's Legal Services. (3)
729. U. S. Attorney. (3)
730. City Attorney. (3)
731. Centro Legal. (3-8)
732. USDA Solicitor. (3)
735. Basic Skills. (1)
736. Legal Rights of the Mentally Handicapped. (3)
737. EEOC. (3)
738. Juvenile Rights. (3)
739. State Public Defender. (3)
740. Clinical Half-Semester. (6)
744. Judicial Extern. (3)
745. Legal Practice with Elderly Clients. (2)
747. EEOC Intern. (3)
748. Felony Prosecution. (3)
750. Ethics [Professional Responsibility.] (2,3)
751. Advanced Spanish for Lawyers. (2)
760. Lawyers in Interpersonal Relations. (2)

# LINGUISTICS

Garland D. Bills, Chairperson
Humanities Bldg. 526, 277-6353

**PROFESSORS:**

Vera P. John-Steiner, Ph.D., University of Chicago
John W. Oller, Jr., Ph.D., University of Rochester

**ASSOCIATE PROFESSORS:**

Garland D. Bills, Ph.D., University of Texas-Austin
Larry P. Gorbet, Ph.D., University of California, San Diego

**ASSISTANT PROFESSORS:**

Alan J. Hudson-Edwards, Ph.D., Yeshiva University
Steven L. Strauss, Ph.D., City University of New York

**PROFESSOR EMERITUS:**

Robert W. Young, Honorary LL.D., University of New Mexico

Associated faculty in other departments.

**MAJOR IN THE COLLEGE OF ARTS AND SCIENCES**
The B.A. major in Linguistics requires a minimum of 36 hours numbered above 200 (24 in required courses, 12 in approved electives) and four semesters of a foreign language or the equivalent. Required courses are: Ling 292L, 303, 317, 318, 351, 367 or 362, 417, 418. The 12 hours in approved electives may be selected from courses in linguistics or from the following courses (others may be approved by the Department): Com Dis 325, 326L, El Ed 481, SATE 430, 442; Engl 436; French 405, 440; German 405, 445; Navajo 401; Spanish 340, 341, 342, 441, 443, 444; Phil 352, 356, 357, 445; Psych 463, 467; Sp Com 323, 350, 421, 423. Ling 470 is strongly recommended for those planning to pursue graduate study in linguistics.

**MINOR IN THE COLLEGE OF ARTS AND SCIENCES**
The minor requires at least 21 hours of linguistics courses numbered above 200: 292L, 303, 317, 318, and 9 additional hours selected from the requirements or approved electives for the major.

**MAJOR OR MINOR IN THE COLLEGE OF EDUCATION**
For the composite major in communication arts, the program leading to certification in TESOL, and teaching of reading in the secondary school, see "Department of Secondary Education" in the College of Education section of this catalog. For the composite minor in bilingual education, see "Department of Elementary Education" in the College of Education section.

**101. Introduction to the Study of Language. (3)**
Bills, Oller, Strauss
(See Anth 111.) Broad overview of the nature of language: language structure, biology of language, language learning, language and thought, bilingualism, social and regional variations, educational implications. Intended to fulfill breadth requirements in any college. 101 and Anth 110 may not both be counted for credit. {Fall, Spring}

**110. Language, Culture, and Man. (3)**
Gorbet, Rushforth
(See Anth 110.)

°**127. Workshop in Practical Linguistics. (1-4)**
Does not normally count toward the major or minor in linguistics. {Offered upon demand}

°**227. Workshop in Practical Linguistics. (1-4)**
Does not normally count toward the major or minor in linguistics. {Offered upon demand}

**292L. Introduction to Linguistic Analysis. (3)**
Bills, Hudson-Edwards
Basic concepts and technical vocabulary of language as a structured system: phonology, morphology, syntax, semantics. Emphasis on descriptive linguistics; some attention to language change and variation. Presumes no prior knowledge of linguistics. 3 lectures, 1 hr. lab. {Fall, Spring}

***303. English Phonetics. (3)** Hudson-Edwards, Riensche
(Also offered as Sp Com and Com Ds 303.) Study of speech sounds, especially English, and application to teaching speech and English and to speech and language remediation, especially with problems of articulation, pronunciation, rhythm, and dialects. {Fall, Spring}

***317. Phonological Analysis. (3)** Hudson-Edwards, Strauss
(Also offered as Anth 317.) Phonetic principles and phonological theory, descriptive analysis of phonological systems, transcriptional practice and problems from selected languages.
Prerequisite: 292L. {Fall}

° Normally offered through Continuing Education only.

***318. Grammatical Analysis. (3)** Bills, Gorbet, Hudson-Edwards
(Also offered as Anth 318.) Principles of morphological and syntactic analysis and the theory of grammar, descriptive analysis of grammatical structures, problems from selected languages.
Prerequisite: 292L. {Spring}

***351. Language in Society. (3)** Hudson-Edwards
Cross-cultural view of speech varieties as they reflect social organization. Topics include: social dialects, societal multilingualism, language contact, language attitudes, language policy and planning.
Prerequisite: an introductory linguistics course. {Spring}

***353. Bilingual Education: History and Theory. (3)**
(Also offered as Ed Fdn 353.) Survey of multilingual education throughout the world; principles and practices.
Prerequisite: an introductory linguistics course.

***359. Language and Culture. (3)** Gorbet, Rushforth
(See Anth 359.)
Prerequisite: an introductory linguistics course. {Fall}

***362. Language Testing. (3)** Oller, Young
(Also offered as Ed Fdn 362.) Survey of language testing procedures with special applications in multilingual and bilingual programs.
Prerequisite: an introductory linguistics course; some knowledge of statistics recommended. {Fall}

***367. Introduction to Psycholinguistics. (3)** Newman
(Also offered as Psych 367.) Survey of broad range of topics in psycholinguistics, with special emphasis on language acquisition, speech perception, memories for linguistic material, language and reasoning.
Prerequisite: 292L or Psych 260. {Fall}

***405. North American Indian Languages. (3)** Gorbet
(See Anth 405.)
Prerequisite: 292L or 317 or 318.

***410. Topics in Anthropological Linguistics. (3)‡**
(See Anth 410.)

***413. Linguistic Field Methods. (3)** Gorbet
(See Anth 413.)
Prerequisites: 317 and permission of instructor.

***417. Phonological Theory. (3)** Hudson-Edwards, Strauss
(Also offered as Anth 417.) Survey of problems in theoretical phonology with emphasis on generative phonology, formalization of rules, and universals.
Prerequisite: 317. {Spring}

***418. Grammatical Theory. (3)** Gorbet
(Also offered as Anth 418.) Survey of problems in theoretical grammar. Topics range from syntax to pragmatics.
Prerequisite: 318. {Fall}

***430. Development of Speech and Language. (3)** Butt
(See Com Dis 430.)
Prerequisite: 292L or Com Dis 280. {Fall}

***440. Introduction to Linguistics. (3)** Oller, Pickett
(Also offered as Engl 440.) Broad overview of the fields of linguistics; principles and practices of linguistic analysis, sociolinguistics, psycholinguistics, and educational linguistics. Oriented primarily to the needs of present and prospective teachers. {Fall, Spring}

***441. English Grammars. (3)** Hogan, Pickett
(See Engl 441.)
Prerequisite: 440 or equivalent. {Spring}

***446. Introduction to Comparative Linguistics. (3)**
(Also offered as Anth 446.) Theories and methods of comparative and historical linguistics, emphasizing change in English, Indo-European, and Native American languages.
Prerequisite: 317.

***451. Mathematical Theory of Formal Languages. (3)**
(See Cp Sci 451.)

***452. Sociolinguistic Variation.** [Sociolinguistic Stratification.]**(3)** Hudson-Edwards
Linguistic variability in relation to social status and situational context; attitudinal correlates of language stratification and sociolinguistic change in progress.
Prerequisite: 351.

***453. Societal Bilingualism. (3)** Hudson-Edwards
Differential use of languages in multilingual societies; attitudinal correlates of differential use; language maintenance and shift in relation to other social change; language loyalty and group identification.
Prerequisite: 351. {Fall 1982}

***470. History of Linguistics. (3)** Hudson-Edwards, Oller
(Also offered as Anth 470.) Survey of methods and assumptions in the scientific study of language from antiquity to present; emphasis on twentieth-century precursors of modern linguistics.
Prerequisites: 317 and 318. {Fall 1982}

***480. Second Language Pedagogy. (3)** Oller
(See SATE and M Lang 480.) {Fall}

***482. Teaching English as a Second Language. (3)** White
(See El Ed and SATE 482.)
Pre- or corequisite: 292L or 440 and permission of instructor. {Spring}

***490. Topics in Linguistics. (1-3)‡**
Special topics motivated by expertise of instructor and interest of students. {Offered upon demand}

**495. Undergraduate Problems. (1-6 hrs. per semester)**
For original individual study project approved by instructor. Maximum of 6 hrs. creditable to linguistics major or minor.
Prerequisite: permission of instructor.

***510. Topics in Anthropological Linguistics. (3)‡**
(See Anth 510.)

***552. Seminar in Multilingual Education. (3)‡**
Prerequisite: 353.

***554. Seminar in Linguistic Theory. (3)‡**
(Also offered as Anth 554.)

***555. Seminar in Educational Linguistics. (1-3)‡**
(Also offered as Ed Fdn 555.) Offered upon demand

***559. Seminar in Sociolinguistics. (3)‡** Hudson-Edwards

***562. Seminar in Language Testing. (3)** Oller
(Also offered as Ed Fdn 562.)

***563. Seminar in Language Acquisition. (3)** John-Steiner
(Also offered as Ed Fdn 563.)
Prerequisites: an introductory linguistics course and a course in developmental or cognitive psychology. Spring

***569. Seminar in Psycholinguistics. (3)‡**
(Also offered as Psych 569.)
Prerequisite: permission of instructor.

***595. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

***599. Master's Thesis. (1-6 hrs. per semester)**

# ANDERSON SCHOOL OF MANAGEMENT

Morgan Sparks, Dean,
Anderson School 263, 277-6471

**PROFESSORS:**

Edwin H. Caplan, Ph.D., University of California[1]
Pao Lun Cheng, Ph.D., University of Wisconsin
Howard V. Finston, Ph.D., Stanford University
William H. Huber, J.D., Ohio State University
Robert A. Lenberg, Ph.D., University of Minnesota
Perry T. Mori, J.D., University of New Mexico[1]
Don B. Panton, Ph.D., University of Arizona
William S. Peters, Ph.D., University of Pennsylvania, (Associate Dean)
Raymond Radosevich, Ph.D., Carnegie-Mellon University
Robert R. Rehder, Ph.D., Stanford University
Daniel M. Slate, Ph.D., University of Washington
Lothar G. Winter, Ph.D., University of Freiburg, Germany

**ASSOCIATE PROFESSORS:**

Joseph E. Champoux, Ph.D., University of California
Karl Christman, M.B.A., Indiana University[1]
Donald K. Clancy, Ph.D., Pennsylvania State University
Frank Collins, Ph.D., University of Houston

Patrica Elliott, D.B.A., University of Colorado
Roger H. Jehenson, Ph.D., Yale University
Rodrigo J. Lievano, Ph.D., University of Houston
Allen M. Parkman, Ph.D., University of California, J.D., University of New Mexico
James L. Porter, J.D., Temple University School of Law
M. K. Rajaraman, Ph.D., Texas Tech University
Richard A. Reid, Ph.D., Ohio State University
Howard L. Smith, Ph.D., University of Washington
John A. Yeakel, Ph.D., University of Florida[1]

**ASSISTANT PROFESSORS:**

Michael Q. Anderson, D.B.A., Indiana University
William I. Bullers, Ph.D., Purdue University
Gordon L. Patzer, Ph.D., Virginia Polytechnic Institute and State University
Fernando Robles, Ph.D., Pennsylvania State University
Robert D. Rogers, Ph.D., University of Nebraska

**LECTURERS:**

Paul R. Koogler, M.Ac., University of Arizona
Ronald A. Milne, M.B.A., Michigan State University
Richard J. Ryberg, J.D., Syracuse University

**CURRICULA** See pp 61-64

**MINOR STUDY**
For those schools and colleges accepting a minor in business, the recommended courses are a minimum total of 1 credit hours selected from MGT 101, 102, 113, 222, 270 271, 284, 358 or 359, and Econ 201.

**101. Fundamentals of Accounting I. (3)**
The development of the accounting cycle, special journal and financial statements. Credit not applicable towar B.B.A. degree.

**102. Fundamentals of Accounting II. (3)**
Continuation of 101, including corporation and manufactu ing accounting and decision making. Credit not applicab toward B.B.A. degree. Prerequisite: 101.

**105. Business Co-op Work Phase. (0)**

**113.** [100.]**Management: An Introduction. (3)**
Modern concepts of organizations and their managemer An overview of functional activities within business a other organizations. {Fall, Spring}

**201. Secretarial Accounting. (3)**
Beginning course in accounting open only to two-year Se retarial Certificate, A.A. in Secretarial Studies and Offi Supervision, and business education students. Credit n applicable to B.B.A. degree. Obtain enrollment appro from the instructor. {Fall, Spring}

**202. Principles of Financial Accounting. (3)**
An examination of the conceptual framework of accounti and the functions of accounting in a business-oriented s ciety. Topics include valuation theory and its applications assets and liabilities, concepts of business income, fun flow analysis, problems of financial reporting. Prereq sites: two semesters of college-level mathematics and o semester of economics with a grade of C or better in ea course. {Fall, Spring}

**222. Contemporary Marketing. (3)**
An introduction to marketing designed to give students understanding of the roles of marketing in our society a in private and not-for-profit organizations. Also provi perspectives on improving various marketing activit (e.g., retail selling, advertising, industrial selling, transp tation and warehousing, etc.). Occasionally offered in Sp ish. Not applicable for credit toward B.B.A. degree. {F Spring}

**270. Introduction to Real Estate. (3)**
Shows how financing, the tax system and supply and mand factors influence real estate values. Specific to include real estate property rights and law, property ev ation and appraisals, land-use planning, interest rate de mination, real estate financial mathematics, sources equity and debt financing, risk analysis, and managing real estate portfolio. Case studies are used. Not applic for credit toward B.B.A. degree.

**271. Introduction to Insurance. (3)**
Protection and savings features of insurance contracts ering personal risks including life, health, and disab Contract analysis, legal aspects, pricing, under-writing marketing methods. Insurance coverages available for tection of property, casualty, and liability insurance tracts from the viewpoint of the insured, insurers creditors. Not applicable for credit toward B.B.A. degre

**284. Selling: Retail and Industrial. (3)**
Considers professional aspects of selling in retail and in trial markets and the role of selling in our economy. Em sizes methods and techniques of selling leading to mut profitable relations between buyers and sellers. Not a cable for credit toward B.B.A. degree.

[1] Certified Public Accountants

**90. Statistical Methodology. (3)**
Also offered as Math 245.) Sample spaces, random variables, probability densities expectation, variance, correlation, estimation, confidence intervals, hypothesis testing power. Specific applications will include T-test, one way analysis of variance, simple linear regression and correlations, applications to business will be emphasized.
Prerequisite: Math 180 or equivalent. {Summer, Fall, Spring}

**91. Business Statistics Laboratory. (1)**
Application of probability and statistics to administrative problems and processes.
Prerequisite: Math 245. {Fall, Spring}

NOTE: With the exceptions noted immediately below, the minimum prerequisites for all 300- and 400-level courses stated are: (1) the specific requirements listed as item 5(b) under "Admission from the University College" (see the description of the Bachelor of Business Administration degree in an earlier section of this catalog), and (2) junior standing. Individual courses may have other prerequisites as indicated in the course descriptions. The exceptions to this rule are courses numbered 340, 358, 359, and 361. The latter three courses are offered specifically to meet the needs of non-management majors and may not be used to fulfill the requirements for the B.B.A. degree.

**300. Operations Research/Management Science.** [Management Science I.](3)
Survey of various mathematical models in operations research designed to assist in managerial decision-making. Topics to be selected from the following: linear programming, transportation models, project scheduling, inventory theory, decision theory, basic time series forecasting models, and simulation. Other topics covered as time permits: quality control applications, probabilistic models, queueing models. Computer programming is required.
Prerequisites: "specific requirements," see above. {Fall, Spring}

**301. Computer-Based Information Systems.** [Management Science II.](3)
Introduction to computer-based management information systems, intended to provide a foundation for the intelligent use of computers as management tools. Computer hardware and software fundamentals, computer systems analysis, design, and implementation.
Prerequisite: "specific requirements". {Fall, Spring}

**302. Accounting for Management Control. (3)**
Primary emphasis on the role of accounting in the processes of management decision-making for planning and control. Topics include: relevant cost analysis, standard costing and analysis of variances; budgeting and responsibility accounting, planned capital expenditures.
Prerequisites: "specific requirements", see above. {Fall, Spring}

**303. Organizational Behavior I-Applications. (3)**
Emphasis on application of behavioral science theory and concepts.
Prerequisites: "specific requirements", see above. {Fall, Spring}

**304. Organizational Behavior II-Theory and Concepts. (3)**
Intensive examination of behavioral science research and theory as a basis for understanding, managing and changing organizations. Emphasis is upon a comparative organizational approach which applies to every organization, public or private, as a socio-technical system.
Prerequisites: "specific requirements", see above. {Fall, Spring}

**305. Organizational Environment. (3)**
The influence of environmental change on the structure and operation of the organization. Social, political, economic, legal, and technological systems are examined as they relate to each other and to the management of small- and large-scale organizations.
Prerequisites: "specific requirements", see above. {Fall, Spring}

**306. Man, Society, and Law (3)**
Examination of the nature, functions, and ends of law. Philosophical schools of thought concerning the nature of man, organizations, and government from Aristotle to the present. Emphasis on law as external constraint on decision-making by individuals and organizations.
Prerequisites: "specific requirements", see above. {Fall, Spring}

**310. Law of Contracts. (3)**
A conceptual approach to transactions between people and organizations. Developement of an understanding of the elements of agreements, the types of agreements which are legally enforceable, and the legal remedies available to the parties thereto.
Prerequisites: "specific requirements", see above. {Fall, Spring}

**322. Marketing Management. (3)**
The marketing system within the framework of private, not-for-profit, and public organizations. Emphasis on the increasingly important role of interdisciplinary tools and the marketing environment. Process of problem-solving and decision-making as well as developing marketing strategy in domestic and international market situations. Occasionally offered in Spanish.
Prerequisites: Econ 200 and 201. {Summer, Fall, Spring}

**326. Financial Management. (3)**
Principles and practices of funds management in private, not-for-profit, and public organizations. Sources and uses of short- and long-term funds, determination of capital requirements, obtaining capital, financial forecasting, lease or buy decisions, application of capital and cash budgeting techniques, choices involving risk.
Prerequisite: 300; Corequisites: 303 or 340, Econ 300, 315. {Fall, Spring}

***328. International Management. (3)**
Provides an understanding of international operations and of international institutions in the private, not-for-profit, and public sectors and of their managerial and environmental problems. Analyzes the structure, functions, and decision-making of international organizations.
Prerequisites: Econ 200 and 201. {Summer, Fall, Spring}

**340. Financial Accounting I. (3)**
Financial reporting theory, applied financial accounting problems, contemporary financial accounting issues. The accounting cycle, asset valuation; income determination; issues resulting from the corporate form of organization; current assets.
Prerequisite: grade of C or better in 202. {Fall, Spring}

**341. Financial Accounting II. (3)**
Continuation of 340. Problems relating to liabilities and non-current assets; the analysis and interpretation of financial statements including the impact of income taxes and changing price levels.
Prerequisites: "specific requirements", see above and 340. {Fall, Spring}

***342. Income Tax Accounting I. (3)**
Technical tax course primarily for accounting majors. Covers the Federal Income taxation of individuals, including capital gains and losses, accounting methods, income, deductions, Social Security, installment sales and alternative tax methods.
Prerequisite: 340 or permission of instructor.

***343. Income Tax Accounting II. (3)**
Continuation of 342. Covers corporation, partnerships, estate and gift taxes, fiduciaries, tax planning and tax shelters.
Prerequisite: 342.

***346. Managerial and Cost Accounting. (3)**
Procedures involved in the development, presentation, and interpretation of accounting information as an aid to management. Usefulness and limitations of accounting data in evaluating and controlling operations, collecting cost information; cost estimation and allocation; standard costs; budgeting; cost-value relationships.
Prerequisite: 303. {Fall, Spring}

***348. Legal Concepts for Accountants. (3)**
An intensive examination of the legal concepts underlying accounting theory and practice. Specific topics: contracts, agency, sales, and legal liability of accountants.
Prerequisites: 340 and 310. {Spring}

**358. Man, Society, and Law. (3)**
Examination of the nature, functions, and ends of law. Philosophical schools of thought concerning the nature of man, organizations, and government from Aristotle to the present. Emphasis on law as an external constraint on decision-making by individuals and organizations. For non-business students. Not applicable for credit toward B.B.A. degree. {Fall}

**359. Law of Contracts. (3)**
A conceptual approach to transactions between people and organizations. Development of an understanding of the elements of agreements, the types of agreements which are legally enforceable, and the legal remedies available to the parties thereto. For non-business students. Not applicable for credit toward B.B.A. degree. {Spring}

**361. Organization Theory. (3)**
Fundamentals of organization and management which apply to organizations involving sizeable groups of people. The manager's job in setting goals and utilizing human and material resources to meet organization objectives. Human relations case problems. For non-business students. Not applicable for credit toward a B.B.A. degree. {Fall, Spring}

**398. Management Career Planning. (1 credit hour for undergraduate students; 0 credit hours for graduate students)**
Career planning and practical preparation for entrance into the job market. Emphasis on investigating career alternatives, self-evaluation, resumes, interviewing, and current job prospects. Available only to students enrolled in the Anderson School. Required for all undergraduate and graduate students. At the undergraduate level, only second-semester juniors or seniors are eligible to enroll. At the graduate level, students must be within two semesters of graduation to enroll. Graded on a CR/NC basis. {Fall, Spring}

***435. Business Data Processing. (3)**
Emphasis is placed on the practical day-to-day information-processing activities of the firm to include structured business system design and documentation, structured COBOL program writing, database data structures, and data access techniques.
Prerequisite or corequisite: 301, C S 237. {Fall}

***436. Production and Operations Management. (3)**
Mathematical models presented for various problems in operations management. Topics selected from the following areas: forecasting, capital budgeting applications, facilities design, inventory, scheduling, reliability, maintenance, aggregate operations planning, and other quantitative business analysis topics.
Prerequisites: 300 and 301 or equivalent. {Fall}

***439. Operations Analysis and Decision Models. (3)**
A course in operations research techniques designed to examine in greater depth topics presented in 300, as well as to introduce the student to new topics and applications. Areas of study may include mathematical programming, probabilistic models, stochastic processes, inventory, queueing, and networks.
Prerequisite: 300 or equivalent, or permission of instructor. {Spring}

***440. Financial Accounting III. (3)**
Continuation of 340 and 341. Problems and theory related to advanced accounting topics, including: partnership operation and liquidation, consolidated financial statements, bankruptcy and corporate reorganization, government entities, not-for-profit entities, and estates and trusts.
Prerequisite: 341. {Fall, Spring}

***443. Auditing. (3)**
Auditing principles and procedure; preliminary considerations, planning the audit program, classes of audits, audit reports, professional ethics, and legal responsibility; case problems.
Prerequisite: 440. {Fall, Spring}

***444. Accounting for Not-for-Profit Organizations. (3)**
Theory and practice of accounting in not-for-profit organizations: municipalities, federal government, public schools, universities, and health organizations. Special topics considered will be fund accounting, zero-based budgeting, financial audits and operations auditing.
Prerequisite: permission of instructor. {Spring}

***445. Contemporary Accounting Topics. (3)**
An examination of selected theoretical issues related to current controversy in accounting.
Prerequisite: 440. Spring

***449. Accounting Information Systems. (3)**
An examination of the relationship between computer-based management information systems and accounting. Applications of M.I.S. techniques in the design and operation of accounting systems.
Prerequisite or corequisite: 346 or permission of instructor. {Fall, Spring}

**451-452. Problems. (1-3, 1-3 hours each semester)‡‡**
Special permission of the adviser and of the Dean of the Anderson School of Management required. Arrangements must be made with individual instructor before enrolling for Problems. A maximum of 6 hours of Problems courses is acceptable for credit toward the B.B.A. degree. {Fall, Spring}

**456. Managerial Economics. (3)**
Gives the student an appreciation of application of economic theory to problems confronting managers. Specific areas of investigation include demand estimation and forecasting; cost estimation and forecasting; production estimation and forecasting; output and price determination and externalities and problems relating to public good.
Prerequisite: Econ 300.

**458. Managerial Ethics. (3)**
An issues- and problems-oriented course in applied management ethics. How to reason ethically about management problems and choices. Focus is on the crises of conscience and the everyday conflicts of role and obligation that characterize our professional lives.
Prerequisite: 308.

***460. Information System Design. (3)**
The design, development and operation of computer-based management information systems. Includes feasibility studies, system analysis, design, implementation, and operation with emphasis on concepts for embedding a computer-based system within the organization.
Prerequisite: 435 or consent of instructor. {Spring}

**463. Human Resources Management: Theory and Application. (3)**
Application of behavioral science research to the problems of personnel management. Implications for manpower recruitment, selection and planning, performance appraisal, training and development, and wage and salary administration.
Prerequisites: 306 and 307, or permission of instructor.

***464. Labor Arbitration and Collective Bargaining. (3)**
Intensive analysis of negotiation and arbitration cases involving wages, employee discipline, seniority rights, management prerogatives, and other collective bargaining issues.
Prerequisites: 306 and 307. {Spring}

***465. Labor Law. (3)**
Case studies of common, statutory, and administrative law, with emphasis on modern labor legislation and related court and administrative agency decisions affecting labor-management relations.
Prerequisites: 306 and 307. {Fall}

***466. Advanced Concepts and Problems in Organizational Behavior. (3)**
Selected topics, problems, learning designs, and models in organizational behavior.
Prerequisites: 306 and 307. {Spring}

**470. Financial Markets and Institutions. (3)**
Analysis of markets for mortgage, state and local, corporate, and Federal debt; flow of funds and their influence on credit conditions, lending, investment, and liquidity policies. Behavior of term structure and risk structure of interest rates. Study of alternative regulatory and structural frameworks of the financial markets.
Prerequisite: 326. {Spring}

**471. Investment Analysis and Management. (3)**
Theory and techniques basic to control of investment risks and optimization of investment returns. Security market operations, portfolio theory, profitability analysis, planning and management of investment programs, timing of securities transactions.
Prerequisite: 326. {Fall}

**472. Advanced Problems in Financial Management. (3)**
Planning, directing, controlling, and financing current operations as well as long-term capital commitments. Internal versus external financing, programming techniques for managing working capital and debt structure. Development of a policy-making framework for sound decision-making under conditions of uncertainty and risk.
Prerequisite: 326. {Spring}

**473. Commercial Banking. (3)**
Emphasizes coordinated asset and liability management of the individual bank. Frequent use will be made of cases to develop major aspects of bank management under changing monetary conditions and competitive forces. Primary emphasis is placed on the analysis of bank financial performance, obtaining funds, investment and loan policies, and capital requirements.
Prerequisite: 326.

***474. International Financial Management. (3)**
Covers application of concepts of managerial finance in the international setting. Reviews and develops as background the financing of international trade and balance of payments problems, including currency hedging in the money and foreign exchange markets. Touches on problems of corporate financial accounting and the effects of currency valuation on income and asset values. Cases are used to study financial decision problems of working capital management, capital budgeting, and providing of funds for international corporate operations with emphasis on Latin America. Surveys the financial institutions, instruments, and markets of international business.
Prerequisite: 326.

***480. Marketing Research.** [Marketing Research and Information Systems.]**(3)**
Research methods and techniques as an aid to marketing management, and the application of these tools to the process of decision-making. Special emphasis on the role of the manager in the specification of research projects and programs.
Prerequisite: 322.

***482. Consumer/Buyer Market Behavior. (3)**
Interdisciplinary analysis of buyer behavior through review of theories, explanatory and predictive models, empirical studies and consumer research methodologies. Study in behavior of consumers/buyers as decision makers. Emphasizes applications to marketing management strategy formulation.
Prerequisite: 322 or equivalent.

***483. International Marketing. (3)**
Analysis of marketing opportunities abroad and major constraints in marketing planning. Develops familiarity with concepts, terminology, and decision-making criteria. Conceptual framework for analysis of marketing constraints and use of marketing intelligence in developing firm's strategies in foreign markets. Some special emphasis on Latin America.
Prerequisite: 322. {Spring}

***484. Sales and Purchasing Management. (3)**
Focuses on major managerial decision areas in the management of both sales and procurement. Within various institutions emphasizes: (a) how customers buy and the systems required to satisfy their needs, and (b) management of field sales force.
Prerequisite: 322.

***486. Retail and Distribution Management. (3)**
Retail store management within the marketing distribution system. Applies systems approach to decision making in management of retailing, wholesaling, and related physical distribution. Primary emphases on major retailing management functions and ability to develop plans for inception and operation of retail business.
Prerequisite: 322. {Spring}

***487. Advertising and Promotion Management.** [Management of Advertising and Promotion Systems.]**(3)**
Analysis of personal and nonpersonal forms of market communications, including market, audience, and individual behavior in both wholesale and retail markets and institutions; relationships of advertising and promotion in Marketing Mix; determination of promotional appropriations, budgets, and strategies, and media analysis and evaluations for various institutions (private, not-for-profit, and public).
Prerequisite: 322. {Fall}

**490-491-492-493. Special Topics in Management. (3, 3, 3, 3)**
Selected offerings of management topics not represented in the regular curriculum.
Prerequisites: 301, 309, 322, 326. {Offered upon demand}

***495. Seminar in Small Business. (3)**
The objectives of the course are to stimulate creative entrepreneurship in small business. It is devoted to consideration of the problems of initiating and/or acquiring, financing, organizing, operating, and marketing the products of small firms.
Prerequisites: 301, 309, 310, 322, 326. {Fall, Spring}

***496. Seminar in Venture Capital for Small Business. (3)**
Focuses on problems encountered in the initiation and acquisition of small businesses. Consideration will be given to the areas of law, accounting, financing, marketing, management, and organization.
Prerequisites: 301, 309, 310, 322, 326. {Fall, Spring}

**498. Senior Seminar. (3)**
Emphasizes the functions of top management. Case studies offer the student an opportunity to develop a habit of administrative thinking as company-wide objectives and policies are formulated and consistent plans and programs are carried into action.
Prerequisites: all Mgt. core courses or permission of instructor. {Fall, Spring}

***500. Quantitative Analysis I. (2)**
{Fall, Spring}

***501. Statistical Analysis for Management Decision** [Quantitative Analysis II.]**(3)**
Prerequisite: 500 or the equivalent. {Fall, Spring}

***502. Accounting and Management Information Systems I. (3)**
{Fall, Spring}

***503. Accounting and Management Information Systems II. (3)**
Prerequisites: 502 or the equivalent. {Fall, Spring}

***504. Organizational Economics I. (3)**
{Fall, Spring}

***505. Organizational Economics II. (3)**
Prerequisite: 504 or the equivalent. {Fall, Spring}

***506. Organizational Behavior I. (3)**
{Fall, Spring}

***507. Organizational Behavior II. (3)**
Prerequisite: 506. {Fall, Spring}

***508. Organizational Environment. (3)**
{Fall, Spring}

***509. Organizational Environment—Law. (2)**
{Fall, Spring}

***510. Introduction to Information Processing.** [Computer Programming.]**(2)**
{Fall, Spring}

***520. Operations Research and Production Management (3)**
Prerequisites: 501, 502, 504, 510. {Fall, Spring}

***522. Marketing Management. (3)**
Prerequisite: 504. {Summer, Fall, Spring}

***526. Financial Management. (3)**
Prerequisites: 500, 502, 504; corequisite: 503. {Fall, Spring}

***528. International Management. (3)**
Prerequisite: 504. {Summer, Fall, Spring}

***530. Applied General Systems Theory. (3)**
Pre- or corequisite: 520 or permission of instructor. {Spring}

***531. Multivariate Analysis for Administrative Science (3)**
Prerequisite: 501. {Spring}

***532. Simulation. (3)**
(Also offered as CS 452.)
Prerequisite or corequisite: 520. {Fall, Spring}

***533. Quantitative Analysis for Systems Planning. (3)**
Prerequisite: 520 or permission of instructor. {Fall}

***534. Introduction to Data Management.** [Introduction to Information Systems.]**(3)**
Prerequisites: 501, 502, 504, 506, 509, 510. {Fall}

***535. Information System Analysis and Design.** [Information System Analysis.]**(3)**
Prerequisites: 534. {Spring}

***536. Quantitative Methods in Health Systems Management. (3)**
Prerequisites: 500, 501, 520, 591, or equivalent. {Fall}

***537. Database Management Systems. (3)**
Prerequisite: 534.

***538. Management Information Systems Design Applications. (3)**
Prerequisites: 535 and 537.

***540. Financial Accounting. (3)**
Prerequisites: 502, 503. (503 may be taken concurrently.) {Fall}

***541.** [544.]**Advanced Accounting Theory and Practice. (3)**Prerequisite: 540. {Spring}

***545. Seminar in Accounting Theory and Its Development. (3)**
Prerequisite: 540 or the equivalent. {Fall}

***546. Seminar in Controllership. (3)**
Prerequisite: 346 or equivalent. {Spring}

***547. Seminar in Advanced Tax Accounting. (3)**
Prerequisite: permission of instructor. {Spring}

***548. Seminar in International Accounting. (3)**
Prerequisite: instructor's consent. {Fall in alternate years}

***549. Seminar in Managerial Control. (3)**
Prerequisite: 503 or equivalent. {Fall}

***551-552. Problems. (1-3, 1-3)††**
{Fall, Spring}

***553. Industrial Organization Economics. (3)**
Prerequisite: 504. {Fall in alternate years}

***554. Public Control of Business. (3)**
Prerequisite: 504. {Fall in alternate years}

***555. Urban Economics and Social Welfare. (3)**
Prerequisite: 504. {Spring in alternate years}

***557. Seminar in Organizational Economics. (3)**
Prerequisite: 504. {Spring in alternate years}

***558. Man and His Environment. (3)**
Prerequisite: 508. {Fall}

***559. Technological Engrepreneurship.** [Seminar in Organizational Ecology] **(3)** {Fall}

***560. Seminar in Cross-Cultural Organizational Behavior. (3)**
Prerequisites: 500, 502, 504, 506, 509, 510. {Spring in alternate years}

***561. Interpersonal Dynamics. (3)**
Prerequisites: 500, 502, 504, 506, 507, 509,510. {Fall}

***562. Organizational Design and Development. (3)**
Prerequisites: 500, 502, 504, 506, 507, 509, 510. {Fall}

***563. Human Resources Management: Theory and Applications I. (3)**
Prerequisites: 500, 502, 504, 506, 507, 509, 510. {Spring in alternate years}

***565. Seminar in Administrative Theory and Decision Making. (3)**
Prerequisites: 500, 502, 504, 506, 507, 509, 510. {Spring}

***566. Human Relations Laboratory. (3)**
Prerequisites: 500, 502, 504, 506, 507, 509, 510. {Spring}

***569. Seminar in Organizational Communication. (3)**
(See Sp Com 544.)

***570. Analysis of the Financial System. (3)**
Prerequisite: 526. {Spring}

***571. Security Analysis and Investment Management. (3)**

Prerequisite: 526. {Fall}

***572. Financial Planning and Capital Budgeting. (3)**
Prerequisite: 526 {Spring}

***573. Seminar in Management of Financial Institutions (3)**Prerequisite: 526. {Spring}

***574. Seminar in International Financial Management (3)**

Prerequisite: 526. {Spring in alternate years}

***575. Seminar in Finance. (3)**
Prerequisite: 526. {Fall in alternate years}

***576. Health Care Financing and Financial Management (3)**
Prerequisites: 502, 504, 526, or equivalent. {Spring}

***580. Research for Marketing Management. (3)**
Prerequisite: 522. {Spring}

***581. Strategic Marketing Planning. (3)**
Prerequisite: 522. {Spring}

***582. Industrial Marketing Management. (3)**
Prerequisite: 522. {Fall}

***583. International Marketing Management.** [Comparative Marketing Systems.]**(3)**
Prerequisite: 522. {Fall}

***584. Management of Sales and Procurement Systems. (3)**
Prerequisite: 522. {Spring}

***585. Management in Latin America.** [Strategic Intelligence: Domestic and International.]**(3)**
Corequisite: 528. {Offered upon demand}

***586. Management of International Operations. (3)**
Prerequisite: 528. {Fall}

***587. Management of World Markets. (3)**
Prerequisite: 528. {Fall}

***588. International Management Seminar. (3)**
Prerequisite: 528. {Spring}

***589.** [585.]**Research in International Management.** [Strategic Management Planning: Domestic and International.]**(3)**
Prerequisites: 528, plus two courses chosen from among 583, 585, 586, 587, 588. {Offered upon demand}

***590. Problems for Interns. (1-6)**

***591. Introduction to Health and Health Care Organizations. (3)**
{Fall}

***592. Environmental Factors in Health Systems Planning. (3)**
Prerequisite: 591 or equivalent. {Spring}

***593. Field Study in Health Systems Management. (3)**
Prerequisite: last year of M.B.A. Program. {Spring}

***594,596,597. Special Topics in Management. (3, 3, 3)**
Prerequisite: permission of instructor.

***595. Seminar in Corporation and Society. (3)**
Prerequisites: 500, 502, 504, 506, 509, 510. {Offered upon demand}

***598. Seminar in General Management. (3)**
Prerequisites: all other core courses. Enrollment normally limited to students in final semester of M.B.A. Program. {Fall, Spring}

***599. Administrative Research and Problems I and II. (1-6)**

***651-652. Doctoral Problems. (1-3, 1-3 hours per semester)**

***699. Dissertation. (3-12 hours per semester)**

***700. Computer-Based Information Systems. (1)**

***701. Management Science. (3)**

***702. Financial Accounting. (3)**

***703. Management Accounting. (3)**

***704. Organizational Economics I. (3)**

***705. Organizational Economics II. (3)**

***706. Organizational Behavior I. (2)**

***707. Organizational Behavior II. (3)**

***708. Organizational Environment. (3)**

***711. Strategic and Tactical Planning. (3)**

***720. Operations Management. (2)**

***722. Marketing and International Business. (3)**

***726. Financial Management. (3)**

***751. Practicum. (3)**

***798. Integrative Seminar. (3)**

# MATHEMATICS AND STATISTICS

Walter T. Kyner, Chairperson
Humanities Building 419, 277-4643

**PROFESSORS:**

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Stoughton Bell, Ph.D., University of California, Berkeley
Alfred S. Carasso, Ph.D., University of Wisconsin
Robert F. Cogburn, Ph.D., University of California, Berkeley
Ralph E. DeMarr, Ph.D., University of Illinois
Donald W. Dubois, Ph.D., University of Oklahoma
Gustave E. Efroymson, Ph.D., Harvard University
Roger C. Entringer, Ph.D., University of New Mexico
Bernard Epstein, Ph.D., Brown University
Archie G. Gibson, Ph.D., University of Colorado
Richard J. Griego, Ph.D., University of Illinois
Reuben Hersh, Ph.D., New York University
Abraham P. Hillman, Ph.D., Princeton University
Lambert H. Koopmans, Ph.D., University of California, Berkeley
Walter T. Kyner, Ph.D., University of California, Berkeley
Merle Mitchell, Ph.D., George Peabody College for Teachers
Cleve B. Moler, Ph.D., Stanford University
Donald R. Morrison,Ph.D., University of Wisconsin
Cornelis W. Onneweer, Ph.D., Wayne State University
Pramod K. Pathak, Ph.D., Indian Statistical Institute
Clifford R. Qualls, Ph.D., University of California, Riverside
David A. Sanchez, Ph.D., University of Michigan
Art Steger, Ph.D., University of California, Berkeley
Alexander P. Stone, Ph.D., University of Illinois
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James A. Ellison, Ph.D., California Institute of Technology
Theodore Guinn, Ph.D., University of California, Los Angeles
Liang-Shin Hahn, Ph.D., Stanford University
Richard C. Metzler, Ph.D., Wayne State University
Steven A. Pruess, Ph.D., Purdue University
Ronald M. Schrader, Ph.D., Pennsylvania State University
Stanly L. Steinberg, Ph.D., Stanford University

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Evangelos A. Coutsias, Ph.D., California Institute of Technology
Howard D. Fegan, Ph.D., Oxford University
Richard M. Grassl, Ph.D., University of New Mexico
Carla Wofsy, Ph.D., University of Wisconsin

**LECTURER III:**

Laura M. Cameron, M.A., University of Texas

**LECTURER II:**

Patrick James Miller, M.A., University of New Mexico
Timothy B. Straney, M.Ed., Bowling Green State University; M.S., Youngstown State University

**PROFESSOR EMERITUS:**

James V. Lewis, Ph.D., University of California, Berkeley
New appointments to be made.

Explanation of footnotes not indicated will be found on p. 78

Students who are planning to take mathematics courses at the University are hereby advised to take at least two years of algebra and one year of geometry in high school. In addition, students who plan to take calculus are advised to take more advanced courses, in particular trigonometry, prior to entering the University.

**FLOW CHART FOR BEGINNING COURSES**

Student's preparation determines starting course in any sequence.
Remedial sequence

010{020{120{{123
{121
{150

Elementary education students not prepared for Math 111 will begin with Math 010 or Math 100.

Business sequence

121{18(

Calculus for social and biological sciences

121{
123{180{181
150{

Engineering sequence

150{162{
123 & 162 {163 {264{
162{

See below for advance courses

Engineering sequence

150{162{ {316{31
123 & 162 {163 {264{31
162{ {314{31

Elementary education sequence
111{ 112{ 215

**PLACEMENT**
Students who plan to take their first mathematics course at UNM must follow the placement procedure set out by the Department of Mathematics and Statistics. The only exceptions are Math 101 (A Survey of the Art), which does not require placement testing, and Math 111 in which placement testing is done in class. On the basis of placement scores, advisers will determine the best mathematics course for the student. Placement testing will be given during preregistration and registration periods. A beginning student who wishes to take Math 163 or a higher course must have departmental permission.

**MAJOR STUDY**
The following is required of all majors:
a. 162, 163, 264, 295 (a 1 hours course) 321 (linear algebra), 361 (advanced calculus); the last two courses are not required in Math Education. Note: Honors calculus - 172-173, if taken, replaces 162, 163, 264.
b. A course of study filed in the Math Office. As soon as major is declared an adviser will be assigned by the department based on the student's interest.
c. Knowledge of a computing language. Math 155 (C S 155) will satisfy this requirement.
d. Completion of 27 hours in courses numbered above 300.
e. Completion of one of the options below.

**MATHEMATICS OPTION**
Requires 322, 311 or 362, 345 or 441, at least one of 362, 421. Plus completion of at least one of the following combinations.
Algebra and number theory sequence: Two of 421, 319, 419.
Analysis sequence: Two of 362, 431, 460.
Applied math sequence: 316-375.
Combinatorics and graph theory sequence: 317-318.
Differential equations sequence: Two of 316-462-463.
Probability and statistics sequence: 441 and either 442 or 443.
The remaining hours required under d) are at the student's option but must be approved by the adviser. At least 6 hours must be in courses numbered above 400.
The following example of a math program satisfies all these requirements, the asterisk indicates an approved option numbered above 300.
162-163-264-321-322- * -441-443.
155-295-361-362- * - *

The following example also completes all requirements and still allows the student to easily switch to the Applied Math option as late as the beginning of the senior year.
162-163-264-316-321-375-361-362
155-295-441-443-322- *

**APPLIED MATHEMATICS OPTION**
The program must include 316, 311 or 362, 375, 345 or 441, one of 462, 463, 464.

**STATISTICS OPTION**
For students not planning graduate work in statistics: 345, 346, 347 are required. The remaining hours must include at least 2 of 340, 441, 444, 445, 446, 447, 448, 449, 452.
For students planning on graduate work in statistics: 441, 443, 445 are required. The remaining hours must include at least 3 or 340, 464, 442, 444, 446, 447, 448, 449, 452.

**MATH EDUCATION OPTION**
321 or 314, 305, 306, 338, 345. At least 12 hours from 311, 319, 308, 310, 307, 331, 375, 322, 406, or other courses approved by the math education adviser.

A student who wishes to enroll in any course requiring a prerequisite must earn a minimum grade of C in the prerequisite course.

**DEPARTMENTAL HONORS**
Undergraduates or prospective undergraduates who intend to continue their studies through the Ph.D. degree or who are interested in challenging problems (possibly including intercollegiate competition) should see the departmental chairperson as early a possible for details of the mathematics honors program.

Note: Undergraduates who intend to do graduate work in mathematics should take Math 322 and 362. It is also advisable for such students to study on of the languages: French, German, or Russian.

**COMBINED PROGRAM IN MATHEMATICS AND ENGINEERING**
**Students interested in the fields of computer design, guided missiles, electronics, or aeronautics are advised to take one of the following engineering minors:**

**Minor in electrical and computing engineering science:** EECE 203, 206L, 213, 238 plus one of the following: EECE 323, 314, 361 and 344L and additional 300-level or higher EECE electives to yield a total of twenty-four credit hours.

**Minor in mechanical engineering:** CE 202L, 302, ME 206L, 301, 317, and two courses selected from ME 302, 314L, 318L, 320, and 357L.

**MINOR STUDY**
264 and 12 hours in courses numbered above 300. A student who wishes to enroll in any course requiring a prerequisite must earn a minimum grade of C in the prerequisite course. **Credit option may not be used for minor study.** A distributed minor is not allowed.

**RESTRICTIONS**
1. Students are not allowed credit for both Math 121 and Math 150.
2. Students are not allowed credit for both Math 150 and Math 123.
3. Students are not allowed credit for both Math 162, 172, 180, and 182.
4. Students are not allowed credit for both Math 163, 173,181 and 183.
5. Students are not allowed credit for both Math 173, and Math 264.
6. Students are not allowed credit for both Math 314 and Math 321.
7. Students who have credit for any courses numbered 121 and above may not take Math 100 or 120 for credit.
8. Students who have credit for any courses numbered 162 and above may not take Math 120, 121, 123, or 150 for credit.
9. A UNM student may not take an exam to establish credit (challenge) in any math course numbered below Math 162. Special permission from Chairperson required for above 162. Math 316 may not be challenged.

**I. INTRODUCTORY COURSES**

**010. Arithmetic for College Students. (0)**
Number system, common and decimal fractions with their applications, measurements associated with geometric figures, variables and equations. Special fee of $60.00 is charged. Offered by Community College only. {Summer, Fall, Spring}

**020. Basic Algebra. (0)**
Functions, equations, inequalities, graphing, and related topics in elementary algebra. Special fee of $60.00 is charged. Offered by Community College only.

**100. Arithmetic and Introductory Algebra. (3)**
Arithmetic and introductory algebra for students who are not prepared to begin at the intermediate algebra level. Placement is by Basic Studies Program procedures (see also the Mathematics Placement procedures in the current schedule of classes). {Fall, Spring}

**101. Mathematics, A Survey of the Art. (3)**
This course is intended to introduce the student to some of the great ideas of modern mathematics and their impact on our civilization. There are no formal prerequisites, but the course will be challenging and, at the same time, rewarding. {Offered upon demand}

**102. An Introduction to Probability and Statistics. (3)**
(Also offered as Soc 280, Psych 201.) An introduction to some of the basic ideas in probability and statistics; analysis of numerical data and descriptive statistics, probability and basic probability models for statistics, sampling and statistical inference, techniques of statistical inference illustrated by examples from a variety of fields; demonstrations of the use of the computer in statistics. Prerequisite: adequate score on placement test or a grade of C or better in Math 120. {Summer, Fall, Spring}

**§120. Intermediate Algebra. (3)**
As preparation for Math 121 or Math 150. Covers linear equations and inequalities, polynomials, factoring, exponents and radicals, fractional expressions and equations, and quadratic equations.
Prerequisites: High School Algebra I and adequate ACT Mathematics score, or a C or better in Math 100. Not open to students with credit for mathematics courses numbered 121 or above. Not acceptable for credit toward graduation. {Summer, Fall, Spring}

**§121. College Algebra. (3)**
Algebra as preparation for Math 180. Includes study of equations, inequalities, graphs, functions, exponential and logarithmic functions, systems of equations and inequalities, and polynomials.
Prerequisite: adequate score on placement test or a grade of C or better in Math 120. Not open to students with credit for courses numbered 150 and above. {Summer, Fall, Spring}

**§123. Trigonometry. (2)**
Definition of the trigonometric functions, radian and degree measure, graphs, basic trigonometric identities and inverse trigonometric functions.
Prerequisite: satisfactory score on placement test of 120 or 121. {Summer, Fall, Spring}

**§150. Algebra and Trigonometry. (4)**
Algebra and trigonometry as preparation for Math 162. Includes study of functions with emphasis on graphs, equations, inequalities, exponential and logarithmic functions, trigonometric and inverse trigonometric functions.
Prerequisite: adequate score on placement test or C or better in Math 120. {Summer, Fall, Spring}

**155. Problem Solving with the Computer. (3)**
(Also offered as C S 155.) Elementary introduction to computing science. Object of course is an understanding of the relationship between mathematics, computing, and problem solving.

**§162. Calculus I. (4)**
Derivative as a rate of change, intuitive, numerical, and theoretical concepts, applications to graphing, trigonometric and exponential functions, integral as a sum, relation between integral and derivative, applications, numerical integration, introduction to space geometry, partial derivatives.
Prerequisite: adequate score on placement test or C or better in 150. Math 123 may be taken concurrently with 162. {Summer, Fall, Spring}

**§163. Calculus II. (4)**
Techniques of differentiation and integration, applications, logarithmic and trigonometric functions, numerical integration, simple differential equations, improper integrals, mean value theorem.
Prerequisite: C or better in Math 162 or permission of department chairperson. {Summer, Fall, Spring}

**§172. Honors Calculus I. (5)**
An honors course covering the material of Math 162 and the first half of Math 163. Open only to students with an ACT Mathematics score of 27 or better. {Fall}

**§173. Honors Calculus II. (5)**
An honors course covering the material of the last half of Math 163 and all of Math 264.
Prerequisite: 172 or permission of instructor. {Spring}

**§180. Calculus for the Social Sciences I.** [Calculus for the Social and Biological Sciences I.]**(3)**
Brief review of functions, graphs; limits; derivative as a rate of change, applications to graphing, maxima, minima, and to motion; integral as antiderivative and as a sum, applications, exponential and logarithmic functions.
Prerequisite: adequate score on placement test, or grade of C or better in Math 121 or 150. {Summer, Fall, Spring}

**§181. Calculus for the Social Sciences II.** [Calculus for the Social and Biological Sciences II.]**(3)**
Integrals; methods of integration; numerical integration; relations between integral and derivative; logarithmic and exponential functions, applications to growth and decay; applied differential equation; Taylor's polynomials and remainder; partial derivatives and multiple integrals; brief review of trigonometry, trigonometric functions, applications.
Prerequisites: C or better in 180 and some knowledge of trigonometry or 123 (123 can be taken simultaneously with 181). {Fall, Spring}

**182. Calculus for the Life Sciences I. (3)**
Functions and graphs; linear relations in the life sciences; growth rates - average and instantaneous; differentiation; curve tracing and optimization; exponential growth and decay; logarithmic functions; periodic phenomena in the life sciences; trigonometric functions.
Prerequisite: Adequate score on placement test or grade of C or better in Math 121 or 150.

**183. Calculus for the Life Sciences II. (3)**
Poiseuille's law for fluid flow; the integral as a sum and as an area; the fundamental theorem of calculus; integration techniques; differential equations; logistic growth; separation of variables; modelling with differential equations; linear regression and curve fitting; approximation techniques and Taylor polynomials.
Prerequisite: Math 182.

**191-192. Freshman Seminars. (1, 1)**
An honors course consisting of background and supplementary material with emphasis on solving challenging problems drawn from freshman-level mathematics. For students concurrently enrolled in Math 162, 163.
Prerequisite: permission of instructor. {191—Fall, 192—Spring}

**245. Fundamentals of Probability and Statistics. (3)**
(Also offered as Mgt 290.) Sample spaces, random variables, probability densities, expectation, variance correlation, estimation, confidence intervals, hypothesis testing, power. Specific applications will include t-tests, one way analysis of variance, simple linear regression and correlation. Applications to business will be emphasized.
Prerequisite: Math 180 or equivalent.

**264. Calculus III. (4)**
Vector representation of curves and surfaces, partial derivatives, gradient, tangent planes, directional derivative, multiple integrals, cylindrical and spherical coordinates, applications, Taylor polynomials and error, power series.
Prerequisite: C or better in 163 or permission of department chairperson. {Summer, Fall, Spring}

**291-292. Sophomore Seminars. (1-3, 1-3 hrs. per semester)**
An honors course in solving challenging problems drawn from sophomore-level mathematics.
Prerequisite: permission of instructor. {Offered upon demand}

**295. Introduction to the Mathematical Professions. (1)**
Description of professional opportunities and responsibilities in pure mathematics, applied mathematics, statistics, and mathematics education. Use of information resources for mathematics; programmable calculators, computers, library materials. Offered on CR/NC basis.
Prerequisite: One year of Calculus. {Spring}

## II. COURSES FOR TEACHERS AND EDUCATION STUDENTS

The following courses are intended primarily for undergraduate and graduate students in the College of Education and for others seeking teaching certification. Other persons may be admitted to these courses by permission of the department chairperson.

**111. Mathematics for Elementary School Teachers I. (3)**
The intuitive and logical background of arithmetic; properties of sets; algorithms of arithmetic in base ten and other bases; properties of the integers, mathematical terminology; elements of number theory.
Prerequisite: satisfactory score on arithemtic skills test administered in class. {Summer, Fall, Spring}

**112. Mathematics for Elementary School Teachers II. (3)**
The properties of the rational number system; extension to the irrationals; decimal and fractional representation of real numbers; intuitive geometry and measurement.
Prerequisite: 111. {Offered once per year}

**115. Mathematics for Elementary School Teachers III. (3)**
Topics from probability and statistics, geometry, and algebra; some applications of mathematics; enrichment topics for the classroom.
Prerequisites: 111 and 112. {Fall, Spring}

† See restrictions.

**¶305. Early Mathematics from an Historical Perspective. (3)**
A survey of mathematical developments prior to 1600; emphasis on solution of problems; comparison of early with modern methods of solutions.
Prerequisite: 264 or equivalent. {Fall}

**¶306. College Geometry. (3)**
Famous theorems of geometry. Fundamentals of Euclidean geometry. Properties of triangles, quadrangles, and circles. Highlights of non-Euclidean geometry. {Offered upon demand}

**¶307. Intuitive Topology. (3)**
This course has a highly theoretical approach. It uses definitions and axioms to solve problems and prove theorems related to point set topology. Most of the work is non-numerical and is geometrical in nature. {Offered upon demand}

**¶308. Theory and Practice of Problem Solving. (3)**
An experience in mathematical invention and discovery at the level of high school geometry and algebra. Problems range from easy to difficult. Grading is on CR/NC basis. Course may be counted toward a major or minor. {Offered upon demand}

**¶309. Algebraic Structures. (3)**
Properties of the integers and polynomials including modular arithmetic; some elementary group, ring, and field theory; possibly applications to the theory of equations.
Prerequisite: 264 or permission of instructor; not open to students with credit in Math 322. {Offered upon demand}

**¶310. Applications of Mathematics. (3)**
Applications of elementary mathematics to the physical, biological, and social sciences.
Prerequisite: one year elementary calculus. {Offered upon demand}

**¶338. Mathematics for Secondary Teachers. (3)**
Topics from secondary mathematics presented from an advanced standpoint and designed to meet the needs of pre- and in-service teachers. Open only to prospective and in-service teachers of mathematics.
Prerequisite: one year of calculus and permission of instructor. {Spring}

**¶339. Topics in Mathematics for Elementary Teachers. (1-3)†**
Problem solving techniques with problems derived from areas such as physics, business, physical education, art, history, architecture, agriculture, using algebra, finite mathematics, number theory, and geometry.
Prerequisite: permission of instructor. {Offered upon demand}

**350. Topics in Mathematics for Secondary Teachers. (1-3)†**
Presents mathematical topics of concern to secondary teachers. Open only to in-service and prospective teachers of secondary mathematics.
Prerequisites: permission of instructor. {Offered upon demand}

## III. UPPER-LEVEL UNDERGRADUATE COURSES

**311. [265.] Vector Analysis. (3)**
Vector algebra, lines, planes; vector valued functions, curves, tangent lines, arc length, line integrals; directional derivative and gradient; divergence, curl, Gauss' and Stokes' theorems, geometric interpretations.
Prerequisite: grade of C or better in 264 or permission of department chairperson. {Summer, Fall, Spring}

****312. Advanced Engineering Mathematics I. (3)**
Infinite sequences and series of functions; uniform convergence; Taylor and Fourier expansions with applications to ordinary and partial differential equations; special functions.
Prerequisites: 264 and 316. {Summer, Fall, Spring}

****313. Advanced Engineering Mathematics II. (3)**
Theory of functions of a complex variable with applications to physical and engineering problems.
Prerequisite: 264. Recommended: 311. {Spring}

¶ These courses are available for graduate credit for the Master's in Education.

§**314. Linear Algebra with Applications. (3)**
Effective solution of systems of linear equations. Eigenvalues and eigenfunctions of symmetric linear operators. Applications to problems in the physical sciences.
Prerequisite: one year elementary calculus. {Summer, Fall, Spring}

****315. Generalized Functions and Operational Methods. (3)**
Theory of integral transforms and generalized functions, with applications to differential and integral equations arising in engineering and mathematical physics.
Prerequisite: permission of instructor. {Offered upon demand}

****316. Applied Ordinary Differential Equations. (3)**
An introduction to the algorithmic theory of ordinary differential equations. Topics to be covered: elementary theory of ordinary differential equations, numerical methods, phase-plane analysis, introduction to Laplace transformations. Nonmathematics graduate students will be required to complete a term project to receive graduate credit.
Prerequisites: 163 and knowledge of FORTRAN. 264 and Engr 120L are recommended. {Summer, Fall, Spring}

****317. Discrete Mathematics.** [Elementary Combinations.]**(3)**
The study of finite structures such as binary codes, Boolean algebras, directed graphs, groups, monoids, sets.
Prerequisite: one year of calculus. {Fall, Spring}

**318. Introduction to Graph Theory. (3)**
Trees, connectivity, coverings, planarity, colorability, digraphs. The emphasis will be on graph theoretic modeling. {Alternate Spring}

****319. Theory of Numbers. (3)**
Divisibility, congruences, primitive roots, quadratic residues, diophantine equations, continued fractions, partitions, number theoretic functions. {Alternate Summers, Spring}

§****321. Linear Algebra. (3)**
Linear transformations, matrices. Eigenvalues and eigenvectors of linear transformations. Inner product spaces.
Prerequisites: 264, or 317 or permission of instructor. {Fall, Spring}

***322. Abstract Algebra. (3)**
Groups and rings, homomorphisms, permutation groups, quotient structures, ideal theory.
Prerequisite: 264, or 317 or permission of instructor. {Alternate Summers, Fall}

****331. Survey of Geometry. (3)**
Topics from affine, projective, Euclidean, and hyperbolic geometries. {Offered upon demand}

****340. Discrete Probability Theory. (3)**
Combinatorial analysis, conditional probability and stochastic independence, the binomial and Poisson distributions, the normal distribution, and the DeMoivre-Laplace limit theorem, probability generating functions.
Corequisite: 163 or permission of instructor. {Spring}

****345. Statistical Methodology. (3)**
An introduction to probability; Bayes Theorem, probability densities, expectation, variance, correlation. An introduction to applied statistics; estimation, confidence intervals, hypothesis testing significance, power. Applications of standard statistical procedures, such as t-tests, one way analysis of variance, and linear regression, to problems from several fields will be given.
Prerequisite: 163, 181, or equivalent. {Summer, Fall, Spring}

****346. Applied Experimental Design and Analysis. (3)**
Principles of designing experiments. Analysis of variance. Some commonly used designs: factorial experiments; randomized, randomized block, Latin square, nested and split plot designs, fixed, random, and mixed models. Throughout course applications and use of existing computer codes will be stressed.
Prerequisite: an introductory course in statistics (e.g., Math 102 or Ed Fdn 501). {Spring}

****347. Data Analysis. (3)**
A survey of several statistical techniques commonly used by researchers. Emphasis is put on the use of statistical computer packages such as BMD, SPSS, and Statpack.
Prerequisite: Math 102 or equivalent. {Fall}

****361-362. Advanced Calculus. (3, 4)**
A rigorous development of the differential and integral calculus of functions of one and several real variables. Prerequisite: 264 is required for 361 and 311 is recommended for 362. {363—Fall, 362—Spring}

****375. Introduction to Numerical Computing. (3)**
(Also offered as Cp Sci 375.) An introductory course covering such topics as interpolation, integration, solution of linear and nonlinear equations, and solution of ordinary differential equations. A single effective method will be studied for each topic and computer codes furnished. Emphasis will be on solving problems.
Prerequisites: calculus and some ability at FORTRAN programming. {Fall, Spring}

**391. Advanced Undergraduate Honors Seminar. (1-3 hrs. each semester, to maximum of 8)**
Advanced problem solving. Especially recommended for students wishing to participate in the Putnam Intercollegiate Mathematical Competition.
Prerequisite: permission of instructor.

**393. Honors Topics in Mathematics. (3)†**
Selected topics from analysis, algebra, geometry, statistics, model building, interdisciplinary studies, and problem solving. {Fall, Spring}

**395. Topics in Mathematics. (1)**
Expository lectures on interesting mathematical problems. Offered on a CR/NC basis.
Prerequisite: 264. {Offered upon demand}

***406. Later Mathematics from an Historical Perspective. (3)**
A survey of mathematical developments after 1600; emphasis on solution of problems.
Prerequisite: 305 or permission of instructor. {Offered upon demand}

****407. Mathematical Methods in Economics. (3)**
(Also offered as Econ 407.) A survey course designed to develop those mathematical results and methods which find frequent use in economic analysis. (This course will not be counted in the hours necessary for a mathematics major or minor.)
Prerequisite: one year of calculus or consent of instructor. {Fall}

***415. Foundations of Mathematics. (3)**
(Also offered as Phil 415.) This course will consider the following questions and topics. What is a number? Do numbers exist? What is a set? Do sets exist? What is an axiom system? Does mathematical rigor exist? Formalists versus realists. Brouwer versus Hilbert. Godel's theorem, Banach-Tarski paradox.
Prerequisite: serious interest in philosophical and historical aspects of modern mathematics. {Offered upon demand}

***416. Axiomatic Set Theory. (3)**
Starting with elementary logical considerations this course develops set theory as a foundation for all mathematics. The presentation is rigorous but assumes no specific topics in previous mathematics. Recommended for the student interested in abstract mathematics who wishes to learn to do rigorous proofs.
Prerequisite: one year of college mathematics. {Offered upon demand}

***417. Combinatorial Analysis. (3)**
Ordinary and exponential generating functions. Enumeration to techniques applicable to difference equations, differential equations, finite groups, and computer science.
Prerequisite: 317 or permission of instructor. {Offered upon demand}

***418. Graph Theory. (3)**
Trees, connectivity, coverings, planarity, colorability, digraphs. The emphasis will be on proofs of theorems.
Prerequisite: 318 or permission of instructor. {Alternate Spring}

***419. Elementary Algebraic Number Theory. (3)**
Similar to Math 319 but ideal theory is assumed and used in the development; quadratic algebraic integers, reciprocity, factorization, and possibly Minkowski's theory, continued fractions and diophantine equations.
Prerequisite: 322. {Offered upon demand}

***421. Theory of Fields. (3)**
Group theory, algebraic field extensions and Galois theory for fields of characteristic zero.
Prerequisites: 322, 361. {Offered upon demand}

***430. Tensor Analysis. (3)**
Tensors, exterior differential calculus, Stokes' theorem and applications to physics and engineering.
Prerequisite: 311 or 362 or permission of instructor. {Offered upon demand}

***431. Introduction to Topology. (3)**
Metric spaces, topological spaces, continuity, concepts used in analysis.
Prerequisite: 361. {Fall}

***434. Introduction to Differential Geometry. (3)**
Differential geometry of curves and surfaces in Euclidean 3-space.
Prerequisites: 361-362. {Offered upon demand}

***439. Topics in Mathematics. (1-3 hrs. per semester)†**

***441. Probability and its Applications. (3)**
Mathematical models for random experiments, random variables, expectation. The common discrete and continuous distributions with application. Joint distributions, conditonal probability and expectation, independence. Laws of large numbers and the central limit theorem. Moment generating functions.
Prerequisite: two years of calculus. {Fall}

***442. Applied Markov Models. (3)**
Markov chains and processes with applications. Classification of states. Decompostions. Stationary distribrutions. Probabilities of absorption, the gambler's ruin and mean time problems. and queuing chains. Introduction to continuous time Markov processes. Construction and analysis of pure jump processes.
Prerequisite: 441 or permission of instructor. {Spring}

***443. Statistical Inference. (3)**
Transformations of univariate and multivariate distributions to obtain the special distributions important in statistics. Concepts of estimation and hypothesis testing in both the large sample and small sample cases with emphasis on the statistical properties of the more commonly used procedures, including the students t-tests and confidence intervals. F-tests and chi-square tests. Performance of procedures under non-standard conditions—robustness.
Prerequisite: 441. {Spring}

***444. Multidimensional Contingency Table Analysis. (3)**
The log linear model as a model for the inter-dependencies among several categorical variables. Strategies for fitting the model and testing goodness of fit for complete and imcomplete tables. Specific applications. Data sets are analyzed either by hand calculations or using computer packages.
Prerequisite: an introductory statistics course such as Math 345 or permission of instructor. {Alternate Fall}

***445. Applied Regression Analysis. (3)**
Simple regression and multiple regression. Residual analysis and transformations. Matrix approach to general linear models. Stepwise procedures, logit analysis, nonlinear least squares, robust regression, ridge regression. Computer applications.
Prerequisite: 345 or permission of instructor. {Fall}

***446. Sampling Theory and Practice. (3)**
Basic methods of survey sampling: simple random sampling, pps-sampling, cluster sampling, systematic sampling and general sampling schemes; estimation based on auxiliary information; stratified sampling; two-stage and multi-stage sampling schemes; assessment and control of non-sampling errors; design of complex samples and case studies.
Prerequisite: 345 or permission of instructor. {Alternate Spring}

***447. Methods of Multivariate Analysis. (3)**
(Also offered as Psych 402.) Properties of the multivariate normal and related distributions. Tests of hypothesis based on these distributions. Multivariate analysis of variance, discriminate analysis, principle components and factor analysis with applications.
Prerequisites: 314, 345 or permission of instructor. {Spring}

***448. Nonparametric Methods. (3)**
Statistical problems and their nonparametric solutions. Rank order tests, sign tests, chi-square tests, and Kolmogorov-Smirnov tests. Tolerancy intervals and nonparametric estimation. Relative efficiency of nonparametric inference.
Prerequisite: 345, and 441 or permission of instructor. {Alternate Fall}

***449. Topics in Probability and Statistics. (3)†**

***452. Time Series Analysis. (3)**
Introduction to time domain and frequency domain models of time series. Data analysis with emphasis on spectral analysis. Topics such as multivariate models; linear filters; linear prediction; forecasting and control.
Prerequisite: Math 441 or permission of instructor. {Offered upon demand}

***453. Reliability Theory. (3)**
Statistical failure models. Distributions. Hazard rate. Estimation and testing hypotheses for failure models. Bayes methods. Accelerated life testing. System reliability.
Prerequisite: Math 345. {Offered upon demand}

***455. Mathematical Logic. (3)**
Formalization of mathematical reasoning. The notion of completeness and consistency will be developed within the context of the first order predicate calculus. The higher order calculus, or the theory of types, will be examined. Two alternative definitions of mathematical truth will be discussed. There are no prerequisites in particular, but the student should have a reasonably strong back- ground in mathematics with a good intuitive feeling for what constitutes mathematical proofs.
Prerequisite: permission of instructor. {Fall}

***460. Introduction to Analysis. (3)**
Metric spaces, completeness. Riemann-Stieljes integrals. Distribution theory on[0,1]. Complex function theory.
Prerequisites: 321, 362. {Fall}

***461. Functions of a Complex Variable. (3)**
Analytic functions, Cauchy theorem and consequences, conformal mapping.
Prerequisite: 361 or consent of instructor. {Offered upon demand}

***462. Introduction to Ordinary Differential Equations. (3)**
Physical origins of differential equations, elementary methods of solution, existence theorems, series and asymptotic solutions, perturbation and numerical methods, phase-plane analysis, and elements of Sturm-Liouville theory.
Prerequisite: permission of instructor. {Fall}

***463. Introduction to Partial Differential Equations. (3)**
Classification of second-order partial differential equations; properly posed problems; separation of variables, eigenfunctions, and Green's functions; brief survey of numerical methods and variational principles.
Prerequisite: permission of instructor. {Spring}

***464. Applied Matrix Theory. (3)**
Determinants; theory of linear equations; matrix analysis of differential equations; eigenvalues, eigenvectors, and canonical forms; variational principles; generalized inverses.
Prerequisite: 321 or 314 or permission of instructor. {Offered upon demand}

***465. Applications of Differential Equations. (3)**
The construction, analysis and interpretation of mathematical models in the natural sciences using a case study approach. Topics for study will be chosen so as to illustrate some fundamental techniques for gaining insight into the qualitative and quantitative content of differential equations, e.g., asymptotics; dimensional analysis; regular, singular and multiple scale perturbation expansions; matching method of averaging; bifurcation analysis; stability and phase plane analysis. {Alternate Fall}

***466. Methods of Theoretical Physics. (3)‡** Alpert, Beckel, Dean, Finley, Thomas
(Also offered as Physcs 466.) A selection of mathematical methods applied to physics. {Spring}

***468. Stochastic Differential Equations. (3)**
Basic theory of stochastic differential equations with applications. The presentation will be at a level accessible to scientists, engineers and applied mathematicians.
Prerequisites: 316, 441 and some familiartity with elementary PDE's. {Spring}

***472. Fourier Series and Integrals. (3)**
Convergence and summability theory of trigonometric series; Bessel's and Parseval's relations; Fourier integrals and their inversion; expansions in series of orthogonal functions; selected applications.
Prerequisite: 361 or permission of instructor. {Offered upon demand}

***475. Numerical Analysis I. (3)**
(Also offered as Cp Sci 475.) Numerical solution of linear and nonlinear systems of equations; the algebraic eigenvalue problems; round-off error.
Prerequisites: 314 or equivalent and some knowledge of FORTRAN programming. Students with credit for 375 should consult with instructor. {Spring}

***476. Numerical Analysis II. (3)**
(Also offered as Cp Sci 476.) Approximation of functions, integration and numerical solution of ordinary differential equations.
Prerequisites: 316 or 361 or equivalent and some knowledge of FORTRAN programming. Students with credit for 375 should consult with instructor. {Spring}

***481. Linear Spaces. (3)**
Linear spaces, normed linear spaces, Hilbert spaces, linear operators, spectral analysis, application to differential and integral equations.
Prerequisite: 361. {Offered upon demand}

***495. Survey of Advanced Mathematics. (1)**
Expository and historical lectures on modern mathematics by different members of the department. Each student will be required to prepare notes on at least one lecture to be distributed to the class. Offered only on a CR/NC basis.
Prerequisites: 361-362, 321-322. {Fall}

***498. Problems. (1-3 hrs. per semester, to a maximum of 6)**
Admission by approval of department chairperson.

***499. Individual Study. (1-3 hrs. per semester, to a maximum of 6)**
Guided study, under the supervision of a faculty member, of selected topics not covered in regular courses.
Admission by approval of the department chairperson.

**IV. GRADUATE COURSES**

Satisfactory completion of 311, 321 and 361, or evidence of equivalent preparation, is required for admission to any of the following courses. The courses 322 and 362 or equivalent are recommended.

***518. Selected Topics in Combinatorics and Graph Theory. (3)**

***519. Selected Topics in Number Theory. (3)†**

***522. Structure Theory of Fields. (3)**
Prerequisites: 421. {Offered upon demand}

***523. Commutative Algebra. (3)**
Prerequisite: 421 or 522. {Offered upon demand}

***524. Valuation Theory. (3)**
Corequisite: 523. {Offered upon demand}

***528. Nash Rings. (3)**
Corequisite: 523 or equivalent. {Offered upon demand}

***529. Selected Topics in Algebra. (3)†**

***533. Algebraic Topology. (3)**
Prerequisite: 322, 421, or 522.

***536. Differential Geometry. (3)**
Prerequisite: 322, 430 or 434.

***539. Selected Topics of Geometry and Topology. (3)†**

***541-542. Probability Theory. (3, 3)**
Prerequisite: 563.

***543-544. Advanced Statistical Inference. (3, 3)**
Prerequisite: 541.

***545. Analysis of Variance and Experimental Design.(3)**
Prerequisite: 445.

***546. Statistical Design of Experiments. (3)**
Prerequisite: 443 or 545.

***547. Multivariate Analysis.** [Theory of Linear Models.](3)
Prerequisites: 443 and 545.

***548. Statistical Laboratory. (1)**
Prerequisite: 445.

***549. Selected Topics in Probability Theory. (3)†**

***551-552. Problems. (1-3, 1-3 hrs per semester)†**

***557. Selected Topics in Numerical Analysis. (3)†**
Also offered as Cp Sci 557.)

***559. Selected Topics in Statistics. (3)†**

***561-562. Functions of a Complex Variable. (3, 3)**
Prerequisite: 362.

***563-564. Functions of a Real Variable, Measure, Integration. (3, 3)**
Prerequisite: 362; 460 recommended.

***565. Harmonic Analysis. (3)**
Prerequisites: 561, 563.

***566. Pattern Recognition. (3)**
(Also offered as Cp Sci 566.)

***569. Selected Topics in Analysis. (3)†**

***571. Ordinary Differential Equations. (3)**
Prerequisite: 462.

***573. Partial Differential Equations. (3)**
Prerequisite: 463.

***575. Dynamic Optimization. (3)**
Prerequisites: 314, 316; recommended: 362.

***576. Advanced Numerical Analysis—Eigenvalues. (3)**
Prerequisites: 475-476.

***577. Advanced Numerical Analysis—Partial Differential Equations. (3)**
Prerequisites: 475, 476, and 462.

***578. Advanced Numerical Analysis—Partial Differential Equations. (3)**
Prerequisites: 475, 476, 463, and an acquaintance with the elementary principles of functional analysis in Banach spaces or equivalent.

***579. Selected Topics in Applied Mathematics. (3)†**

***581-582 Functional Analysis. (3, 3)**
Prerequisites: 563-564; recommended: 473-474.

***583-584.** [473-474.]**Linear Analysis. (3, 3)**
Prerequisite: Math 361, 312, 314, 316, or equivalent with consent of instructor. {Offered upon demand}

***589. Selected Topics in Functional Analysis. (3)†**

***598. Practicum. (1-6)**

***619. Seminar in Number Theory. (1-3)†**

***629. Seminar in Algebra. (1-3)†**

***639. Seminar in Geometry and Topology. (1-3)†**

***649. Seminar in Probability and Statistics. (1-3)†**

***650. Reading and Research. (1-6)†**

***669. Seminar in Analysis. (1-3)†**

***679. Seminar in Applied Mathematics. (1-3)†**

***689. Seminar in Functional Analysis. (1-3)†**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# MEDICAL SCIENCES

## ANATOMY

Aaron J. Ladman, Chairperson
Basic Medical Science Building 149, 277-5555

**PROFESSORS:**

Robert O. Kelley, Ph.D., University of California, Berkeley
Aaron J. Ladman, Ph.D., Indiana University
Leonard M. Napolitano, Ph.D. (Director of the Medical Center, Dean of the School of Medicine), St. Louis University
George E. Omer, Jr., M.D. (Orthopaedics), University of Kansas
Robert E. Waterman, Ph.D., University of Washington

**ASSOCIATE PROFESSOR:**

William G. Dail, Jr., Ph.D., Virginia Commonwealth University

**ASSISTANT PROFESSORS:**

Michael S. Kaplan, Ph.D., Boston University
Stewart P. Mennin, Ph.D., University of California, Los Angeles
Heather M. Murray, Ph.D., Virginia Commonwealth University, Richmond
Linda C. Saland, Ph.D., City University of New York
John A. Trotter, Ph.D., University of Washington

## BIOCHEMISTRY

Robert B. Loftfield, Chairperson
Basic Medical Science Building 1, 277-3333

**PROFESSORS:**

Francis N. LeBaron, Ph.D., Harvard University
Robert B. Loftfield, Ph.D., Harvard University
Terence J. Scallen, M.D., Ph.D., University of Minnesota
David L. VanderJagt, Ph.D., Purdue University

**ASSOCIATE PROFESSORS:**

John L. Omdahl, Ph.D., University of Kentucky
Philip Reyes, Ph.D., University of California, Davis
Leslie F. Smith, Ph.D., University of London

**ASSISTANT PROFESSORS:**

Alonzo C. Atencio, Ph.D. (Assistant Dean), University of Colorado
Gaynor C. Wild, Ph.D., Tulane University
Beulah M. Woodfin, Ph.D., University of Illinois

**RESEARCH ASSISTANT PROFESSORS:**

Andrej Pastuszyn, Ph.D., University of Vienna
Calvin D. Tormanen, Ph.D., University of Minnesota

## FAMILY, COMMUNITY AND EMERGENCY MEDICINE:

William H. Wiese, Chairperson
Family Practice/Psychiatry 277-3253

**PROFESSOR:**

William H. Wiese, M.D., Harvard Medical School

**ASSOCIATE PROFESSORS:**

Benson R. Daitz, M.D., Universidad Autonoma de Guadalajara
Warren A. Heffron, M.D., University of Missouri
Arthur Kaufman, M.D., State University of New York, New York City
Jerome Levy, Ph.D., (Psychiatry), University of Denver
S. Scott Obenshain, M.D. (Assistant Dean) (Pediatrics), Bowman Gray School of Medicine
George R. Schwartz, M.D., Downstate Medical Center, State University of New York, Brooklyn
Betty J. Skipper, Ph.D., Western Reserve University
Donald A. West, M.D. (Psychiatry), University of Kansas

**ASSISTANT PROFESSORS:**

Max D. Bennett, Ph.D. (Planning Officer, Medical Center), Johns Hopkins University
Peter DiVasto, Ph.D., University of New Mexico
Rebecca Jackson, M.D., Dartmouth Medical School
Martin P. Kantrowitz, M.D., University of Louisville
George F. Key, M.D., University of Iowa
Dorothy Pathak, Ph.D., University of New Mexico
Dennis P. Price, M.D., The Medical College of Pennsylvania
James R. Roberts, M.D., Thomas Jefferson University
David P. Sklar, M.D., Stanford University
William T. Tandberg, M.D., University of California, Los Angeles
Berthold E. Umland, M.D., Univesity of New Mexico School of Medicine
Albert V. Vogel, M.D. (Psychiatry), University of California, Los Angeles

**RESEARCH ASSISTANT PROFESSOR:**

Gaither D. Bynum, M.D., University of New Mexico School of Medicine

## MEDICINE

Ralph C. Williams, Jr., Chairperson
University of New Mexico Hospital-7th Floor, 277-4661

**PROFESSORS:**

Jonathan Abrams, M.D., University of California, San Francisco
Otto Appenzeller, M.D., PhD. (Neurology), Sydney University
Arthur D. Bankhurst, M.D., Lucknow Medical College, India
Philip R. Eaton, M.D., University of Chicago Medical School
Kenneth D. Gardner, M.D. (Assistant Dean), Stanford University
William R. Hardy, M.D., University of Illinois
David H. Law, IV, M.D., Cornell University
John K. Leach, M.D., Albany Medical College
Denis M. McCarthy, M.D., University College, Dublin, Ireland
Darwin L. Palmer, M.D., Columbia University
Glenn T. Peake, M.D. (Director, Clinical Research Center), University of Kansas
J. Loren Pitcher, M.D. (Associate Dean), Northwestern University
William P. Reed, M.D., Harvard Medical School
John H. Saiki, M.D., McGill University
Milan Slavik, M.D., Charles University, Czechoslovekia
Robert G. Strickland, M.D., University of Adelaide, South Australia
Noel L. Warner, Ph.D., University of Melbourne
Ralph C. Williams, Jr., M.D., Cornell University

**RESEARCH PROFESSOR:**

Karl Rieckmann, M.D., Ph.D., University of Adelaide, South Australia

**ASSOCIATE PROFESSORS:**

Pratap S. Avasthi, M.D., Lucknow Medical College, India
Larry E. Becker, M.D., University of Iowa
Maire T. Buckman, M.D., University of Washington
Robert T. Cauthorne, M.D., Medical College of Virginia
Thomas W. Chick, M.D., University of Arkansas
James S. Goodwin, M.D., State University of New York, Buffalo
Frederick Hashimoto, M.D., Harvard Medical School
Diane J. Klepper, M.D. (Assistant Dean), University of Kansas
Sunder J. Mehta, M.D., University of Bombay, India
Roberto Prizont, M.D., Universidad de Buenos Aires
Joseph H. Saiers, M.D., University of New Mexico
David Schade, M.D., Washington University, St. Louis
Stephen Thompson, M.D. (Neurology), Ohio State University
Andre W. Van As, M.D., University of Witwatersrand Medical School, South Africa
Dennis Van Epps, Ph.D., University of Illinois

**ASSISTANT PROFESSORS:**

William G. Chapman, M.D., University of Edinburgh Medical School
Laurence Elias, M.D., Stanford University
Simeon E. Goldblum, M.D., University of Pittsburgh
Richard Goldman, M.D.,State University of New York
Warren A. Heffron, M.D., University of Missouri
David E. Hoekenga, M.D., Wayne State University
Philip L. Hooper, M.D., University of Tennessee Medical School
Gregory E. Johnson, M.D., University of New Mexico
Curtis O. Kapsner, M.D., University of Minnesota
Richard C. Klein, M.D., Ohio State University
Frederick T. Koster, M.D., Case Western Reserve University
Veena Raizada, M.D., Lady Hardinge Medical College, University of Delhi, India
Johathan M. Samet, M.D., University of Rochester
Wolfgang Schmidt-Nowara, M.D., Case Western Reserve University
Toby L. Simon, M.D. (Pathology), Washington University
Gary L. Simpson, M.D., Rush Medical College
Kenneth J. Smith, M.D. (Pathology), Cornell
Neale D. Smith, M.D., University of Washington
Donald E. Stehr, M.D., University of Illinois
William D. Tandberg, M.D. (Family, Community & Emergency Medicine), UCLA School of Medicine
A. Tzamaloukas, M.D., Athens University Medical School
Richard Watts, M.D., Wayne University
George F. Werner, M.D., Creighton Medical School
Robert E. White, M.D., Tulane University

**INSTRUCTORS:**

Thomas Parzyck, M.D., University Michigan
Charles T. Spalding, M.D. (Pharmacology), University of New Mexico

**ADJUNCT ASSOCIATE PROFESSOR:**

Robert P. Searles, M.D., Creighton University

## MICROBIOLOGY

Joseph V. Scaletti, Chairperson
Basic Medical Science Building, 277-3344

**PROFESSORS:**

Leroy C. McLaren, Ph.D., University of California, Los Angeles
Joseph V. Scaletti, Ph.D. (Director, Allied Health Sciences Center, Associate Provost for Research), Cornell University
Sei Tokuda, Ph.D., University of Washington
John A Ulrich, Ph.D. (Pathology), University of Minnesota

**ASSOCIATE PROFESSORS:**

Thomas I. Baker, Ph.D., Western Reserve University
Carl E. Cords, Jr., Ph.D., University of Washington
Ellen H. Goldberg, Ph.D., Cornell University Medical College

**RESEARCH ASSOCIATE PROFESSOR:**

Larry Davis, M.D. (Neurology), Stanford University

**ASSISTANT PROFESSORS:**

Roger J. Radloff, Ph.D., California Institute of Technology
Dennis E. Van Epps, Ph.D. (Medicine), University of Illinois

**RESEARCH ASSISTANT PROFESSOR:**

Andrew O. Martinez, Ph.D., University of Arizona

## NEUROLOGY

Joseph M. Bicknell, Chairperson
University of New Mexico Hospital-2nd Floor South, 277-3342

**PROFESSORS:**

Otto Appenzeller, M.D., Ph.D., University of London
Joseph M. Bicknell, M.D., University of Michigan
Russell Snyder, M.D., University of Pennsylvania

**ASSOCIATE PROFESSORS:**

Richard Brenner, M.D., University of Louisville
Thomas J. Carlow, M.D., University of Cincinnati
Larry Davis, M.D., Stanford University
Bruce Porch, Ph.D. (Communicative Disorders & Psychology), Stanford University
Gary A. Rosenberg, M.D., Albert Einstein Medical School
Stephen W. Thompson, M.D., Ohio State University

## OBSTETRICS AND GYNECOLOGY

Robert H. Messer, Chairperson
University of New Mexico Hospital-6th Floor South, 277-4051

**PROFESSORS:**

Robert D. Hilgers, M.D., University of Minnesota
Robert H. Messer, M.D., University of Michigan
Helmuth Vorherr, M.D., University of Mainz/Rhein, West Germany

**ASSOCIATE PROFESSORS:**

Jon M. Aase, M.D. (Pediatrics), Yale University
Herbert Koffler, M.D. (Pediatrics), University of Cincinnati
John H. Mattox, M.D., University of Colorado
R. Richard Murray, M.D., (Director, Maternity & Infant Care Project), State University of New York, Upstate Medical Center at Syracuse
Lucille Ann Papile, M.D. (Pediatrics), The Medical College of Pennsylvania
Richard P. Perkins, M.D., Columbia University, College of Physicians and Surgeons
John C. Slocumb, M.D., University of Rochester

**ASSISTANT PROFESSORS:**

Francisco Ampuero, M.D., University of San Francisco Xavier Medical School
Lydia E. Prado, M.D., University of Puerto Rico Medical School

**ADJUNCT ASSOCIATE PROFESSOR:**

Marshall Levin, M.D., Tufts Medical School, Boston

## ORTHOPAEDICS

George E. Omer, Jr., Chairperson
University of New Mexico Hospital-6th Floor South, 277-4107

**PROFESSOR:**

George E. Omer, Jr., M.D., University of Kansas

**ASSOCIATE PROFESSORS:**

William C. Kilpatrick, Jr., M.D., Howard University
Moheb S. Moneim, M.D., Cairo University Medical School

**ASSISTANT PROFESSORS:**

Marvin B. Hays, M.D., University of Oklahoma
William J. O'Brien, Ph.D. (Director, Physical Therapy Program), University of New Mexico School of Medicine
William B. Pratt, M.D., Jefferson Medical College

**INSTRUCTORS:**

Fred M. Rutan, M.S., R.P.T., Springfield College

**LECTURER II**

Susan R. Erickson, R.P.T., University of Kentucky
Cindy D. Gregory, R.P.T., University of North Carolina at Chapel Hill

## PATHOLOGY

Robert E. Anderson, Chairperson
Basic Medical Science Building 341, 277-2228

**PROFESSORS:**

Robert E. Anderson, M.D., Case Western Reserve
William C. Black, III, M.D., University of Colorado
Mario Kornfeld, M.D., Medical Faculty in Zagreb, Yugoslavia
Kenneth S. K. Tung, M.D., University of Melbourne, Australia
John A. Ulrich, Ph.D., University of Minnesota
Noel L. Warner, Ph.D., University of Melbourne, Australia
James T. Weston, M.D. (Chief Medical Investigator, State of New Mexico), Cornell University

**ASSOCIATE PROFESSORS:**

Cooley Butler, II, M.D., Stanford
Philip J. Garry, Ph.D., Ohio State University
William R. Hardy, M.D. (Medicine) University of Illinois
Robert E. Howard, M.D., Ph.D., Washington University, St. Louis
Jack E. Jackson, M.D., Ph.D., Northwestern University School of Medicine
Scott W. Jordon, M.D., University of Kansas
Charles R. Key, M.D., Ph.D., University of Oklahoma School of Medicine
Gary W. Long, M.D., UCLA Medical School
Thomas S. McConnell, M.D. (Director of Clinical Pathology Labs), University of Illinois
Toby L. Simon, M.D., Washington University
Roger L. Sopher, M.D., Johns Hopkins University
Jimmy C. Standefer, Ph.D., University of Kansas
Gary M. Troup, M.D., University of Cincinnati

**ASSISTANT PROFESSORS:**

Sue A. Bartow, M.D., University of Texas Southwestern Medical School
Richard T. Goldhahn, Jr., M.D., Temple University School of Medicine
Kenneth J. Smith, M.D., Cornell University
Wilbur L. Williams, M.D., University of New Mexico School of Medicine

**LECTURER III:**

Phillip W. Day, D.V.M. (Director, Animal Resource Facility), Oklahoma State University

## PEDIATRICS

Robert E. Greenberg, Chairperson
2701 Frontier N.E., 277-4842

**PROFESSORS:**

Irving N. Berlin, M.D. (Psychiatry), University of California
Alice H. Cushing, M.D., University of Colorado School of Medicine
Robert E. Greenberg, M.D., University of California School of Medicine
Russell D. Snyder, M.D. (Neurology), University of Pennsylvania

**ASSOCIATE PROFESSORS:**

Jon M. Aase, M.D., Yale University
William Berman, Jr., M.D., Washington University, St. Louis
Thomas A. Borden, M.D. (Surgery), University of Chicago
Stewart Duban, M.D., University of Chicago
Terence J. Gribble, M.D., Stanford University
Stanley Handmaker, M.D., Ph.D., Albert Einstein School of Medicine
Alberto Hayek, M.D., Xaveriana University Medical School
Fred S. Herzon, M.D. (Surgery), University of Illinois
John D. Johnson, M.D., Stanford University
Herbert Koffler, M.D. (Director, Neonatal Intensive Care Project), University of Cincinnati
Shirley Murphy, M.D., University of Kansas
S. Scott Obenshain, M.D. (Assistant Dean), Bowman Gray School of Medicine
Lucille A. Papile, M.D., The Medical College of Pennsylvania
Richard P. Perkins, M.D. (Obstetrics-Gynecology), Columbia University
Steven M. Yabek, M.D., State University of New York, Downstate Medical Center

**ASSISTANT PROFESSORS:**

Lawrence Berger, M.D., Harvard Medical School
Lance A. Chilton, M.D., Johns Hopkins University
Ben M. Cummins, M.D. (Psychiatry), Baylor University College of Medicine
Terrence Dillon, M.D., Tufts University
Marilyn H. Duncan, M.D., University of Washington
Leland L. Fan, M.D., Baylor College of Medicine
Richard S. Goldman, M.D. (Medicine), State University of New York, Buffalo
Marshall D. Levine, M.D., Tufts Medical School
Glenn T. Peake, M.D. (Medicine), University of Kansas
Ross L. Snyder, Jr., M.D. (Psychiatry), Yale Medical School

**RESEARCH ASSISTANT PROFESSORS:**

Kyrieckos A. Aleck, M.D., Washington University
Rochelle Burstein, M.D., Albert Einstein College of Medicine

## PHARMACOLOGY

Leon Hurwitz, Chairperson
Basic Medical Science Building 143A, 277-4411.

**PROFESSORS:**

Leon Hurwitz, Ph.D., University of Rochester
Donald V. Priola, Ph.D. (Physiology), Loyola University
Milan Slavik, M.D. (Medicine), Charles University, Czechoslovakia
Hulmuth Vorherr, M.D. (Obstetrics & Gynecology), University of Mainz/Rhein, West Germany

**ASSOCIATE PROFESSORS:**

William C. Buss, Ph.D., University of Oregon Medical School

**ASSISTANT PROFESSORS:**

Barry Avner, Ph.D., State University of New York, Buffalo
Linda J. McGuffee, Ph.D., University of Tennessee
Edward Reyes, Ph.D., University of Colorado
Charles T. Spalding, M.D., Ph.D., University of New Mexico
William F. Woodside, Ph.D., Vanderbilt University School of Medicine

## PHYSIOLOGY

Donald V. Priola, Chairperson
Basic Medical Science Building, 277-5751

**PROFESSORS:**

Donald V. Priola, Ph.D., Loyola University
Albert Ratner, Ph.D., Michigan State University
Sidney Solomon, Ph.D., University of Chicago

**ASSOCIATE PROFESSORS:**

William R. Galey, Jr., Ph.D., University of Oregon
John K. Leach, M.D. (Medicine), Albany Medical College
Gerald K. Weiss, Ph.D., University of Illinois
Stephen C. Wood, Ph.D., University of Oregon

**ASSISTANT PROFESSORS:**

Donald R. Britton, Ph.D., Ohio State University
William J. O'Brien, Ph.D. (Orthopaedics), University of New Mexico
Lloyd Donald Partridge, Ph.D., University of Washington

## PSYCHIATRY

Walter W. Winslow, Chairperson
620 Camino de Salud, 277-2223.

**PROFESSORS:**

Irving N. Berlin, M.D. (Director, Children's Psychiatric Center), University of California
Robert Kellner, M.D., Ph.D., University of Liverpool School of Medicine, England
Karl P. Koenig, Ph.D., University of Washington
Jerome Levy, Ph.D., University of Denver
Lester M. Libo, Ph.D., Stanford University
Max G. Magnussen, Ph.D. (Director, Programs for Children), University of Kentucky
Richard T. Rada, M.D., University of Chicago
Britton K. Ruebush, Ph.D. (Director, Albuquerque Child Guidance Center), Yale University
Robert A. Senescu, M.D., Boston University Medical School
Walter W. Winslow, M.D. (Director, Mental Health Programs), Loma Linda University

**ASSOCIATE PROFESSORS:**

Robert L. Bergman, M.D., University of Chicago
Jean M. Goodwin, M.D., Harvard Medical School
Stephen R. Perls, Ed.D., University of Oregon
Ross L. Snyder, Jr., M.D., Yale Medical School
Albert Vogel, M.D., UCLA Medical School
Donald A. West, M.D., University of Kansas

**ASSISTANT PROFESSORS:**

John N. Bennett, II, M.D., Stanford University
Jose Miguel Canive, M.D. (Clinical Director, Community Programs, BCMH/MRC), University of Madrid, Spain
David B. Crawford, M.D., State University of New York at Downstate Medical Center
Kenneth F. Crumley, M.D. (Associate Medical Director, Children's Psychiatric Center), Yale University
Ben M. Cummins, M.D., Baylor University College of Medicine
Daniel A. Dansak, M.D., Georgetown University
Peter DiVasto, Ph.D. (Family, Community and Emergency Medicine), University of New Mexico
Jack L. Farber, M.D., University of California at Davis
Alan Frank, M.D. (Director, Heights Outpatient Clinic), Columbia University
Samuel I. Glover, M.D., Howard University
A. Lane Leckman, M.D., University of New Mexico
Albert Lorbati, M.D., University of Vermont, Burlington
Thomas A. O'Donnell, M.D., University College, Dublin, Ireland
Sanghae Park, M.D. (Clinical Director, Intensive Treatment Services, MH/MRC), Seoul National University, Korea
Gary Peterson, M.D., University of South Florida
Angel G. Pezzarossi, M.D. (Clinical Director, Programs for Children), University of San Carlos, Guatemala
Timothy S. Schuster, M.D., Columbia University
Winston W. Shen, M.D. (Medical Director, Alcohol Division), Taipei Medical College, Tai Pai, Taiwan
Joanne W. Sterling, Ph.D. (Director BCM/MRC), University of New Mexico
Alan J. Stevens, M.D., University of Texas at San Antonio

## RADIOLOGY

Robert D. Moseley, Jr., Chairperson
University of New Mexico-1st Floor, 843-2260.

**PROFESSORS:**

James H. Christie, M.D. (Director, Nuclear Medicine and Science Program), Case Western Reserve
Charles A. Kelsey, Ph.D., University of Notre Dame
Robert D. Moseley, Jr., M.D., Louisiana State University
Jose M. Sala, M.D., Escuela de Medicina de la Universidad del Litoral, Rosario, Argentina
John R. Thornbury, M.D., Ohio State University School of Medicine

**ASSOCIATE PROFESSORS:**

Adele R. Altman, M.D., New York Medical College
Richard G. Lane, Ph.D., University of California, Los Angeles
Fred A. Mettler, Jr., M.D., Jefferson Medical College, Philadelphia
Alfred R. Smith, Ph.D., Texas Tech University

**ASSISTANT PROFESSORS:**

Howard I. Amols, Ph.D., Brown University
Gail E. Blakely, M.D., University of Colorado
Jerome Burstein, M.D., Albert Einstein College of Medicine
Steven E. Bush, M.D., University of California, San Diego
Jose F. Garcia, M.D., Medical School of Buenos Aires
Jorge C. Paradelo, M.D., Escuela de Medicina, Universidad Nacional de Rosario, Argentina
Robert S. Seigel, M.D., Northwestern University
Jeffrey D. Wicks, M.D., University of Michigan

## SURGERY

W. Sterling Edwards, Chairperson
University of New Mexico Hospital-2nd Floor, 277-4151

**PROFESSORS:**

Thomas A. Borden, M.D., University of Chicago
Raymond C. Doberneck, M.D., Ph.D., Marquette University
W. Sterling Edwards, M.D., University of Pennsylvania
George E. Omer, Jr. M.D. (Orthopaedics), University of Kansas
William R. Schiller, M.D., Northwestern University
Daniel E. Smith, M.D., University of Colorado School of Medicine
William A. Sterling, M.D., University of Pennsylvania

**ASSOCIATE PROFESSORS:**

Bechara Akl, M.D., Faculte Francaise de Medecine., Beirut
Fred S. Herzon, M.D., University of Illinois
Michael G. Orgel, M.D., Ohio State
Jeffrey R. Woodside, M.D., University of Oregon
Steven M. Yabek, M.D., State University of New York, Downstate Medical Center

**ASSISTANT PROFESSORS:**

David C. Allison, M.D., University of Michigan
E. David Crawford, M.D., University of Cincinnati
Joseph W. Flynn, M.D., University of California, Irvine
Tyrone L. Hardy, M.D., Howard University
John W. Hutchinson, M.D., University of California
Joe F. Neal, M.D., Stanford University

**LECTURER II:**

Matthew W. Smith, M.S., University of New Mexico

## CLINICAL SCIENCE

**425. Introduction to Clinical Nutrition. (3)** Sanders
(Also offered as H Ec 425.) The determination of nutritional status of normal persons by the health team, using research methodology.
Prerequisites: physiology, Nutr 325, 326L or equivalent, biochemistry or concurrently 600 Med Biol I. {Summer}

**511-512. First Year Curriculum. (18, 18)**

**521-522. Second Year Curriculum. (18, 18)**
Prerequisite: First Year Curriculum (511-512).

**530-531. First Year Curriculum. (PCC)** [Primary Care Track.]**(18, 18)**

**532. Second Year Curriculum. (PCC)** [Primary Care Track I-B.]**(18)**

**540. Medicine Clerkship. (12)**

**541. Obstetrics-Gynecology Clerkship. (6)**

**542. Pediatric Clerkship. (6)**

**543. Psychiatry Clerkship. (6)**

**544. General Surgery. (6)**

**550. Surgical Specialities. (6)**

**570. Fourth Year Curriculum.** [Neurology-Neurosurgery Clerkship.]**(16)**

**571. Clinical Science IV. (12)**

**572. Selectives. (12)**

**573. Electives. (1 cr. hr. for each week of full-time medically related activity)**

## MEDICAL SCIENCE

**201. Seminar—Medicolegal Investigation of Death. (2)**
This seminar, offered through the Division of Forensic and Environmental Sciences is designed to introduce the student to modern concepts of investigation and preliminary examination of the circumstances and causes of death of sudden, unexpected, and unnatural causes. The course is designed primarily for experienced law enforcement investigators and representatives of the Office of the Medical Investigator and assumes a working knowledge of the handling of evidence and report preparation. 42 hours of didactic presentation, discussion, and practical exercises. A written and practical examination must be satisfactorily completed for credit.

**202. Seminar—Medicolegal Investigation of Death, Advanced. (1)**
Offered through the Division of Forensic and Environmental Pathology, will acquaint the student with modern techniques and concepts in the performance of medicolegal investigative systems with in-depth information necessary for proper investigation and examination of complex and unnatural deaths. The student is required to assist in preparation and presentation of study cases presented in Path 201.
Prerequisite: Path 201.

**203. Medicolegal Examination (P). (2)**
Offered through the Division of Forensic and Environmental Pathology, will aquaint the student with modern techniques and concepts in the performance of medicolegal autopsies. Topics will vary with the subject matter. The presentations are: routine dissection and special techniques, case evaluation and assessment, toxicology, and evidence. Designed primarily for those with medical laboratory or related background who are currently functioning in a position to be of assistance to the pathologists in performing autopsies, both routine and mediocolegal. Requires 20 hours of didactic presentation and 60 hours of laboratory experience and on-the-job training. Satisfactory completion of a written examination and demonstration of competence in the laboratory are required for credit.

****301. Introductory Physiology for Engineers. (3)** Physiology Staff
Course designed to provide rudimentary familiarization with physiological systems for nonbiological scientists. Purpose is to provide a base of understanding of regulatory mechanisms as they exist in biological systems. To be given in Los Alamos.
Prerequisites: college physics, mathematics through advanced algebra, inorganic chemistry, or by permission of instructor.

****302. Fundamentals of Cellular Physiology. (3)** Physiology Staff
Cell physiology for nonbiological scientific personnel, with emphasis on cellular function.
Prerequisites: college physics, advanced algebra, inorganic chemistry, or permission of instructor. **Offered at Los Alamos Residence Center only.**

****303. Physiology for Scientists and Engineers. (3)** Physiology Staff
Physiological mechanisms underlying abnormally functioning biological systems.
Prerequisite: 301 or permission of instructor. Offered at Los Alamos.

***400. Special Problems in Medical Physics. (1-3)** Kelsey
A special problem in the area of medical physics of mutual interest to the student and the instructor will be selected.
Prerequisite: permission of instructor. {Fall, Spring}

***410. Research in Medical Sciences. (1-3)** Medical School Staff
Laboratory research in the medical sciences for undergraduate students.
Prerequisite: permission of instructor. {Offered upon demand}

***423. Introductory Biochemistry. (3)** Biochemistry Staff
(Also offered as Chem 423.) Introductory course into metabolic reactions within the cell with emphasis on a chemical understanding of the way the cell integrates and controls intermediary metabolism; also included are quantitative problems in pH control, enzyme kinetics and energetics.
Prerequisite: Chem 302 or Chem 308. {Fall, Spring}

***425. Environmental Biochemistry. (3)** Vander Jagt
(Also offered as Chem 425.) Evaluation of natural and man-made environmental agents to which we are all exposed; emphasis will be placed on understanding the biochemical reactions which accompany this exposure. Topics include mutagens, carcinogens, antibiotics, pesticides, water and air pollution, food additives, radiation biology.
Prerequisite: 423 or Biol 429. {Spring}

***430. Microbial Taxonomy and Structure. (1)** Scaletti
Taxonomy and structure in microbial systems.
Prerequisite: student in Department of Microbiology. {Fall}

***431. Microbial Metabolism (2)** Scaletti
The metabolism of microbial systems.
Prerequisite: student in Department of Microbiology. {Fall}

***432. Microbial Genetics. (2)** Baker
Genetics and molecular biology in microbial systems.
Prerequisite: student in Department of Microbiology or permission of instructor. {Fall}

***433. Basic Virology. (1)** Cords, Radloff
Structure, composition, classification, and replication of viruses.
Prerequisite: student in Department of Microbiology or permission of instructor. {Fall}

***434. Clinical Laboratory Microbiology. (2)** Ulrich
Prerequisite: permission of instructor. May be repeated under different areas of concentration. {Offered upon demand}

***436. Medical Virology. (3)** McLaren
Lectures on biology of animal cell cultures; nature of viruses and rickettsia; etiology, epidemiology, pathogenesis, and laboratory diagnosis of viral and rickettsial infections.
Prerequisite: pathogenic bacteriology. {Spring 1982 and alternate years}

***437L. Medical Virology Laboratory. (2)** McLaren
Laboratory experience in animal cell culture techniques, animal inoculation, and serological reactions for the isolation and identification of viruses of medical importance.
Prerequisites: pathogenic bacteriology, immunology, and permission of instructor. {Spring 1982 and alternate years}

***439L. Medical Mycology. (3-5)** Ulrich
Classification, structure, function, immunology, host-parasite relationships, isolation and identification of pathogenic actinomycetes, yeast, and fungi.
Prerequisite: Biol 454L. 3 hrs. lecture/wk., 6 hrs. lab/wk. {Spring 1982 and alternate years}

***510. Human Microscopic Anatomy. (3)** Anatomy Staff
Prerequisite: 6 hrs. of biology or its equivalent or permission of instructor. **Offered at Los Alamos Laboratory only.**

***511. Advanced Human Microscopic Anatomy. (3)** Moffat
Prerequisite: 510, 6 hrs. biology or equivalent or permission of instructor. **Offered at Los Alamos Laboratory only.**

***520. Energy and Metabolism.** [Biochemistry of the Nervous System.]**(3)** Omdahl, Trujillo, Woodside
(Also offered as Biol 520.)
Prerequisite: one semester biochemistry.

***570. Surgical Pathology Seminar-Elementary. (1)** Pathology Staff
Prerequisites: 594 and permission of instructor.

***571. Diagnostic Cytology Seminar. (1)** Jordan
Prerequisites: 594 and permission of instructor. Students must take course two times (but register only once) to get 1 hr. credit.

***572. Clinico-Morphologic Correlation Conference. (2)** Key
Prerequisites: 594 and permission of instructor.

***573-574. Clinical Pathology Seminar. (2, 2)** Howard
Prerequisites: 594 and permission of instructor.

***575. Pathology. (8)** Anderson
Offered only during summer session at the Given Institute, Aspen, Colorado.
Prerequisite: see prospectus.

***583. Clinical Chemistry. (1-2)** Standefer
Prerequisites: organic chemistry and biochemistry.

***584L. Clinical Chemistry Laboratory. (8)** Standefer
Prerequisite: permission of instructor.

***585. Advanced Biochemistry I. (3)**
(Also offered as Chem 585.)
Prerequisites: Chem 302 or Chem 308, 423 or a passing grade on ACS placement exam; pre- or corequisite: Chem 311 or Chem 315; undergraduates: approval of instructor. {Fall}

***586. Advanced Biochemistry II. (3)**
(Also offered as Chem 586.)
Prerequisites: Chem 302 or Chem 308, 423 or a passing grade on ACS placement exam; pre- or corequisite: Chem 311 or Chem 315; undergraduates: approval of instructor. (585 and 586 are independent courses and may be taken in either sequence.) {Spring}

***587. Advanced Topics in Biological Chemistry. (1-3)††**
(Also offered as Chem 587.)
Prerequisite: 423 and sometimes 585 or 586, depending upon topic. {Offered upon demand}

***588-589. Advanced Biometry for Research. (3, 3)** Pathak
Prerequisite: Math 162-163 or 180-181 or permission of instructor.

***590-591. Medical Biology I. (1-18, 1-18 hrs. semester)**
Prerequisite: permission of the Dean of the School of Medicine.

***592L-593L. Medical Biology I Laboratory. (1-6, 1-6 hrs. semester)**
Prerequisite: same as 590-591.

***594-595. Medical Biology II. (1-18, 1-18 hrs. per semester)**
Prerequisites: 590-591, 592L-593L, and permission of the Dean of the School of Medicine.

***596L-597L. Medical Biology II Laboratory. (1-6, 1-6 hr. semester)**
Prerequisite: same as for 594-595.

***599. Master's Thesis. (1-6 hrs. per semester)**

***601-602. Advanced Physiology. (1-7, 1-7 hrs. each semester)** Staff
Prerequisites: 590-591 or consent of Physiology Department.

***610L. Experimental Cytology. (3-6)** Anatomy Graduate Staff
Prerequisites: 590-591 or equivalent.

***611L. Fine Structure and Electron Microscopy. (6-12)** Anatomy Graduate Staff
Prerequisites: 590-591 and 610L or equivalent and approval of Anatomy Department Chairperson.

***612L. Histochemistry and Cytochemistry. (4-6)** Anatomy Graduate Staff
Prerequisites: 590-591 and 619L or equivalent.

***613. History of Anatomy. (1-2)** Ladman

***614. Research Techniques in Morphology. (2-4)** Anatomy Staff
Prerequisites: 590-591 or equivalent.

***615. Current Topics in Morphology. (1-2)** Anatomy Staff
Prerequisites: 590-591 or equivalent. {Fall, Spring}

***616. Selected Topics in Developmental Biology. (3)** Kelley, Waterman
Prerequisite: Biol 412L or 429L or consent of instructor. {Offered upon demand}

***618. Seminar in Anatomy. (1)** Ladman

***619. Comparative Vertebrate Physiology. (3)** Wood
(Also offered as Biol 515.)
Prerequisites: 590-591, Biol 429L, 430L, or equivalent. {Offered upon demand}

***620. Advanced Biochemistry. (6)‡** Smith
{Summer only}

***621. Biochemistry of Proteins. (3)‡** Lotfield, Smith, Woodfin
Prerequisites: Chem 311-312 and either Chem 481-482 or Med Sci 590-591.

***622. Biochemistry of Phospholipids. (3)** LeBaron
Prerequisites: Chem 423 or 481-482 or Med Sci 590-591.

***623. Biochemistry of Steroids. (3)** Scallen
(Also offered as Chem 623.)
Prerequisites: Chem 301-302, Chem 423 or 481 or Med Sci 590-591.

***631L. Introduction to Research Techniques in Microbiology. (2-5)‡** Radloff
Prerequisite: permission of instructor. Limited to students in the Department of Microbiology. {Offered upon demand}

***632. Advanced Topic in Microbiology. (1-3)** Microbiology Staff
Prerequisites: biochemistry, general microbiology or equivalent. {Offered upon demand}

***634. Biochemical Genetics. (2-4)‡** Baker
Prerequisites: Med Sci 590 or biochemistry, genetics, microbiology, and permission of instructor. {Spring 1981 and alternate years}

***635. Immunobiology. (3)** Tokuda
Prerequisites: biochemistry, general microbiology, and permission of instructor. {Fall}

***636. Advanced Virology. (3)** Cords, Radloff
Prerequisites: biochemistry, immunology, virology, or equivalent and permission of instructor. {Offered Spring 1981 and alternate years}

***637. Immunogenetics. (3)††** Goldberg
Prerequisites: 635 and permission of instructor. {Offered Spring 1981 and alternate years}

***638. Microbiology Seminar. (1)**

***639. Phagocytic Cells. (2)** Van Epps
Prerequisites: 635 and permission of instructor. {Offered Spring 1982 and alternate years}

***649. Circulatory-Respiratory Physiology. (3)** Priola, Wood, Weiss
Prerequisite: general physiology course and/or permission of instructor. **Offered at Los Alamos Laboratory only.**

***650. Biological Membrane-Structure and Function. (3)** Galey
Prerequisites: 590-591 or Biol 429, 430 or permission of instructor. {Offered in alternate years}

***651. Integrative Functions of the Endocrine System. (3)** Ratner
Prerequisites: same as 650. {Offered in alternate years}

***652. Advanced Cardiovascular Physiology. (3)** Priola, Weiss
Prerequisies: 590-591. {Offered in alternate years}

***653. Renal Water and Electrolyte Metabolism. (4)** Solomon
Prerequisites: same as 650. {Offered in alternate years}

***654. Hormonal Control of Sex and Reproduction. (3)** Ratner
Prerequisite: same as 650. {Offered in alternate years}

***655. Integrative Neurophysiology. (3)** Weiss, Feeney
(Also offered as Psych 650.)
Prerequisites: general physiology course and/or consent of instructor. {Spring}

***656. Advanced Neurophysiology. (3)** Partridge
Prerequisite: same as 650. {Fall}

***657. Special Topics in Physiology. (1-3)** Physiology Staff
Prerequisite: permission of instructor.

***658. Physiological Techniques. (4)** Physiology Staff
Prerequisite: permission of instructor.

***659. Seminar in Physiology. (1)** Priola

***660. Advanced Respiratory Physiology. (3)** Wood
Prerequisites: 590-591. {Offered in alternate years}

***661. Advanced Cellular Physiology. (3)** Galey and Physiology Staff
Prerequisite: permission of instructor. {Offered upon demand}

***670. Principles of Drug Action at the Cellular Level. (2)** Pharmacology Staff
Prerequisites: 590-591 or equivalent or special permission of instructor. {Spring, Fall}

***671. Advanced Topics in Pharmacology. (1-3)‡** Staff
Prerequisite: permission of instructor. {Fall, Spring}

***672. Special Problems in Pharmacology. (1-3)‡** Staff
Prerequisite: permission of instructor. {Fall, Spring}

***673L. Laboratory Techniques in Pharmacology. (1-3)‡** Pharmacology Staff
Prerequisite: permission of instructor. {Fall, Spring}

***674. Pharmacology Seminars. (1)‡** Staff
Prerequisite: permission of instructor. {Fall, Spring}

***682. Pathology Research Seminar. (1)** Warner
Prerequisite: permission of instructor.

***683. Immunology Seminar. (1)** Warner
Prerequisite: permission of instructor.

***690. Research in Clinical Medical Sciences. (2-6 hrs per semester, to a maximum of 12)** Obenshain
Prerequisite: matriculated in an accredited medical school.

***691. Scientific Writing for Graduate Students. (1)** Ladman

***695. Research in Basic Medical Sciences. (2-6 hrs. per semester, to a maximum of 12)** Staff

***699. Dissertation. (3-12 hrs. per semester)**

See Graduate Programs Bulletin for description of courses numbered 500 and above.

# FAMILY, COMMUNITY AND EMERGENCY MEDICINE

Open only to students admitted to Emergency Medicine Program.

**101. EMT-A Course. (4)** Staff
This is U.S.D.O.T. EMT-A course designed specifically for ambulance personnel who have access to specialized vehicles equipped with specialized items of equipment. The course content trains ambulance attendants to recognize and stabilize patients with life-threatening emergencies at the scene and in transport, utilizing the specialized vehicles and specialized items of equipment.
Prerequisite for paramedic training. {Fall, Spring}

**201. EMT-I Modules I, II, III. (2)** Staff
This is a 40-hour course which consists of the first three modules of the Paramedic course: I- The role, responsibilities, and medical-legal status of the EMT-P; II- Human systems and patient assessment; III- Shock and fluid therapy. Following the didactic sessions, each student must successfully start five IVs on patients under supervision.
Prerequisite: Successful completion of an 81-hour EMT-A course and support, in writing, from the sponsoring community. {Summer, Fall, Spring}

**202. EMT-I Modules IV, V, X. (3)** Staff
This is an 80-hour course which consists of three Paramedic Modules: IV- Pharmacology (60 hours) V- Respiratory System, and X- Medical Emergencies. Following the didactic sessions, each student must have 20 hours of clinical experience in the hospital in Emergency Department and/or Intensive Care and/or Respiratory Therapy.
Prerequisite: successful completion of 201 (EMT Modules I, II, III); restricted; approval of instructor.

**301. EMT-Paramedic Course. (23)** Staff
Comprehensive study of the acute, critical differences in physiology, pathophysiology, or clinical symptoms as they pertain to the prehospital emergency medical care of the infant, child, adolescent, adult and geriatric patient. Emphasis on skills and knowledge essential for administering field care. Consists of three components: classroom, clinical (in-hospital) and field internship.
Prerequisites: 101 (EMT-A Course), minimum 6 months' field experience as EMT-A, current EMT-A certification passing screening process for admission into program. {Spring}

# HUMAN SERVICES

General prerequisite: enrollment in UNM School of Medicine Human Services Worker Program or permission of instructor.

**101. [100.]Introduction to Human Services. (3)**
Historical development of health and mental health services, which has led up to the current revolution in the human services delivery system. Exploration of the role and function of the human services worker within care-giving instructions.

**102. Principles of Interviewing. (3)**
Provides basic knowledge of the interviewing process with emphasis on developing interviewing skills. Developing an awareness of ways in which the student's background, attitude, and behavior influence the interview. Videotaped class interviews will provide material for discussion and critique.

**104. Principles of Human Behavior. (3)**
A survey of issues aimed at understanding behavior in terms of the person as a biological and behaving organism. Specifically, students will focus on learning, language development, perception, and group membership.

‡‡ May be repeated for credit to a maximum of 9 hours.

**105. Group Dynamics. (4)**
Through an understanding of the observer-participation model the student will explore various relationships as they develop in dyads, small-group and large-group settings. Relate practical experience from field placement to group models of interaction.

**109. New Techniques of Assessment Intervention. (3)**
A broad overview of types and techniques of assessment and intervention with individuals, families and groups, aimed at amelioration of perceived or actual problems.

**149. Workshop. (1-3)‡‡**
In-depth individual and/or small-group exploration of problem or special interest areas (e.g., behavior therapy or substance abuse). May be research or demonstration project.

**150. Clinical Experience in Human Services. (4)**
Student is assigned to a community service agency for 160 to 240 hours per semester. Will be supervised by agency personnel. Weekly seminar with Human Services staff required.

**201. Family Process: Functional and Dysfunctional Families. (3)**
Assists in developing an understanding of how families function in today's society, in terms of their ability to cope with various sources of stress. Describes theoretical and therapeutic systems which serve as a guide for human services workers in family interventions.

**202. Community Mental Health. (3)**
Attempts to understand and define populations at risk in communities which includes exploring mental health and mental illness at the individual, family, neighborhood, local, state and national levels. Preventative and treatment strategies for and with these populations will be examined.
Prerequisites: 101 and 109, or equivalent.

**204. Aging: A Psycho-Social Exploration. (1-3)‡‡**
An introduction to the process of aging and the problems of the aged. An examination of the life changes which occur during the aging process with a focus on the social and psychological aspects.

**210. The Culture of Youth. (3)**
Physical, social and psychological development of the adolescent will be explored to provide a base for understanding the changing behavior, mores, and value systems of youth.
Prerequisite: Ed Fdn 303 or equivalent.

**211. Institutions and the Exceptional Child. (3)**
Theory of abnormal development as it manifests itself from infancy through adolescence. Behavioral characteristics and causes of emotional and social deviancy in children. Examination of how institutions and institutionalization hinder and help the child's growth and development.
Prerequisite: Ed Fdn 303 or equivalent.

**250-251. Advanced Clinical Experience in Human Services. (4, 4)**
Continuation of 150 with increased student responsibility for client care/service. Weekly seminar.
Prerequisite: 150.

# MEDICAL LABORATORY SCIENCES

Barbara A. Fricke, Director Medical Building 4 101, 277-5434

**INSTRUCTOR:**

Barbara A. Fricke, M.S., M.T.(ASCP), The Ohio State University

**LECTURERS:**

Penelope P. Allen, B.S.M.T.(ASCP), New Mexico State University
Cecilia C. Dall, B.S.M.T.(ASCP), Carson Newman College
Margie D. Keck, B.S.M.T.(ASCP), The Ohio State University
Patricia L. Olson, B.A.M.T.(ASCP), S.C., University of California, Los Angles
S. J. Sperry, B.S.M.T. (ASCP), University of New Mexico

**§010. Theory and Practice of Laboratory Technology (Preclinical). (0)**
Basic theory and practice of clinical laboratory procedures in hematology, microbiology, clinical chemistry, clinical microscopy, blood banking, and serology required of certified laboratory assistant (CLA). Instruction consists of 400 hours of didactic and 600 hours of student laboratory practice (January).
Prerequisite: acceptance into Medical Laboratory Assistant Program.

**§020. Practice in Laboratory Procedures (Clinical). (0)**
A supervised hospital laboratory experience to perfect skills learned in 010. Clinical experience will consist of 1000 hours of rotation through the sections of an approved, affiliated teaching hospital laboratory.
Prerequisite: successful completion of 010.

**§101. Clinical Urinalysis I. (2)**
Basic theory and practice of urinalysis for Med Lab Tech program; 3 lectures, 9 hrs. lab for 4 weeks.
Prerequisite: 100. {Fall}

**§102. Clinical Serology I. (2)**
Basic theory and practice of serology for Med Lab Tech program; 3 lectures, 9 hrs. lab for 4 weeks.
Prerequisite: 100. {Fall}

**§103. Practical Training in Clinical Urinalysis I. (1)**
Supervised performance of procedures in an affiliated hospital laboratory; urinalysis for Med Lab Program; 12 hrs. per week for 4 weeks.
Prerequisite: 101. {Fall}

**§104. Practical Training in Clinical Serology I. (1)**
Supervised performance of serological procedures in an affiliated hospital laboratory; 12 hrs. per week for 4 weeks.
Prerequisite: 102. {Fall}

**121. Introduction to Medical Laboratory Sciences. (1)**
Introduction to scope and ethics of profession. Basic techniques, instrumentation, laboratory safety, and terminology. 1 lecture and tours of hospital laboratories.

**§201. Clinical Chemistry I. (5)**
Basic theory and practice of clinical chemistry and instrumentation for Med Lab Tech program; 40 hrs. per week for 5 weeks.
Prerequisite: 101. {Spring}

**§202. Clinical Hematology and Hemostasis I. (4)**
Basic theory and practice of blood cell enumeration and morphology and coagulation studies for Med Lab Tech program; 40 hrs. per week for 4 weeks.
Prerequisite: 101. {Spring}

**§203. Clinical Microbiology I. (5)**
Basic theory and practice of bacteriology and parasitology for Med Lab Tech program; 40 hrs. per week for 5 weeks.
Prerequisite: 101. {Spring}

**§204. Clinical Immunohematology I. (2)**
Basic theory and practice in blood banking for Med Lab Tech program; 40 hrs. per week for 2 weeks.
Prerequisite: 101. {Spring}

**§251. Practical Training in Clinical Chemistry I. (4)**
Supervised performance of clinical chemistry procedures in an affiliated hospital laboratory for Med Lab Tech program; 40 hrs. per week for 6 weeks.
Prerequisite: 201. (July-November)

**§252. Practical Training in Clinical Hematology and Hemostasis I. (3)**
Supervised performance of blood cells counts, cell morphology and coagulation procedures in an affiliated hospital laboratory for Med Lab Tech program; 40 hrs. per week for 5 weeks.
Prerequisite: 202. (July-November)

**§253. Practical Training in Clinical Microbiology I. (3)**
Supervised performance of methods and techniques of identification of pathogenic bacteria and parasites in an affiliated hospital laboratory for Med Lab Tech program; 40 hrs. per week for 5 weeks.
Prerequisite: 203. (July-November)

**§254. Practical Training in Clinical Immunohematology I. (2)**
Supervised performance of blood banking procedures in an affiliated hospital laboratory for Med Lab Tech program; 40 hrs. per week for 4 weeks.
Prerequisite: 204. (July-November)

**§400. Orientation to Medical Technology Professional Training. (1)**
Introduction to the scope and ethics of the profession including a review and/or study of lab math, safety procedures, venipuncture techniques, spectrophotometry, electronics, care and use of the microscope, blood cell

morphology, glassware and general lab equipment; 32 hrs. per week for 2 weeks.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§401. Clinical Chemistry II. (8)**
A study of the chemical reactions that occur in normal and diseased processes of the body and the principles and methods used in testing such reactions; 8 hrs. per day for 33 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§402. Clinical Hematology and Hemostasis II. (8)**
A thorough study of the blood and blood-forming tissues, including normal and abnormal morphology and a study of the coagulation mechanism; 8 hrs. per day for 32 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§403. Clinical Bacteriology.** [Clinical Microbiology II] **(7)**
The microbiological aspects of infectious disease is studied with emphasis on techniques, methods, and differential media used to isolate and identify pathogenic bacteria; 8 hrs. per day for 24 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§404. Clinical Immunohematology II. (5)**
The theory and principles of blood banking, including the techniques of cell typing, antibody identification, and component therapy; 8 hrs. per day for 15 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§405. Clinical Urinalysis II. (2)**
A study of the kidney and the physical, chemical, and microscopic examination of urine; 8 hrs. per day for 9 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§406. Clinical Immunology and Serology II. (3)**
A study of the fundamental principles of immunology and serological methods used in evaluation and diagnosis of disease; 8 hrs. per day for 12 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§407. Clinical Parasitology. (2)**
A thorough study of the medically important parasites including staining and wet prep procedures, life cycles, identification of and diseases; 8 hrs. per day for 9 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§408. Clinical Mycology. (2)**
A study of the medically important fungi including diseases and methods of isolation and identification; 8 hrs. per day for 8 days.
Prerequisite: acceptance into Medical Technology Program. (January-October)

**§451. Practical Training in Clinical Chemistry II. (5)**
Supervised instruction in the performance of analytical procedures for the various chemical constituents of blood and other body fluids in an affiliated hospital laboratory for students enrolled in the Med Tech Program; 40 hrs. per week for 16 weeks.
Prerequisite: 401. (October-May)

**§452. Practical Training in Hematology and Hemostasis II. (5)**
Supervised instruction in the performance of hematological procedures and coagulation studies in an affiliated hospital laboratory for students enrolled in the Med Tech Program; 40 hrs. per week for 6 weeks.
Prerequisite: 402. (October-May)

**§453. Practical Training in Microbiology. (5)**
Supervised instruction in the performance of microbiological procedures in an affiliated hospital for students enrolled in the Med Tech program; 40 hrs. per week for 6 weeks.
Prerequisites: 403, 407, and 408. (October-May)

**§454. Practical Training in Immunohematology II. (3)**
Supervised instruction in the performance of blood banking procedures in an affiliated hospital for students enrolled in the Med Tech program; 40 hrs. per week for 4 weeks.
Prerequisite: 404. (October-May)

**§455. Practical Training in Urinalysis II. (1)**
Supervised instruction in the performance of urinalysis and special urine test procedures in an affiliated hospital for students enrolled in the Med Tech program; 40 hrs. per week for 2 weeks.
Prerequisite: 405. (October-May)

**§456. Practical Training in Immunology and Serology. (1)**
Supervised instruction in the performance of immunological and serological test procedures in an affiliated hospital for students enrolled in the Med Tech program; 40 hrs. per week for 2 weeks.
Prerequisite: 406. (October-May)

**§499. Pre-Employment Practicum (PEP) (2)**
Full-time supervised experience in a variety of clinical settings. Increased responsibility in all aspects of laboratory procedures.
Prerequisite: Successfull completion of all Medical Technology courses; 4 weeks. CR/NC Grading. Spring

# PHYSICAL THERAPY

**301L. Therapeutic Exercise I. (3)** Rutan
Basic transfers and gait training; nonspecific therapeutic exercise techniques; coordination and relaxation exercises.
Prerequisite: 321L. 1 lecture, 6 hrs. lab. {Fall}

**302L. Therapeutic Exercise II. (3)** Rutan
Continuation of 301. Use of apparatus and assistive devices. Evaluation and program planning for specific orthopaedic problems.
Prerequisite: 301L. 2 lectures, 3 hrs. lab. {Spring}

**306L. Therapeutic Procedures.** [Therapeutic Procedures II.]**(3)** Rutan
Physiological effects, indications, contraindications, rationale for therapeutic uses of heat, cold, water low- and high frequency electrical currents, ultrasound, ultraviolet, and infrared irradiation.
Prerequisite: 341 and 361L 2 hrs lecture, 3 hrs. lab. {Spring}

**310. Introduction to Physical Therapy.** [Professional Development.]**(2)** Rutan
Professional ethics, quality of care assessment, communication and the professional organization.
Prerequisite: 321L. {Summer}

**321L. Human Anatomy for Physical Therapists. (6)** Gregory
Gross anatomy of the musculoskeletal, nervous, circulatory, respiratory, digestive, and reproductive systems.
Prerequisite: admission to program. 5 lectures, 15 hrs. lab. {Summer only}

**322L.** [322.]**Neuroanatomy for Physical Therapists. (3)** O'Brien
Gross and microscopic anatomy of the brain and spinal cord with emphasis on integration of the sensory and motor systems.
Prerequisite: 321L. {Spring}

**330.** [432.]**Professional Development II. (2)** O'Brien
Research design and methods; survey and critique of professional literature.
Prerequisites: 361L, 401L, 451L. {Spring}

**341. Survey of Medical Sciences for Physical Therapists I. (2)** Gregory
Basic pathological processes of disease and injury and mechanisms of defense and repair.
Prerequisite: 321L. {Fall}

**342. Survey of Medical Sciences for Physical Therapists II. (2)** Orthopaedic Faculty
Acquired and congenital orthopaedic problems, traumatic injuries, peripheral nerve lesions, burns, and amputations.
Prerequisites: 321L, 341. {Spring}

**352L.** [351L.]**Evaluative Procedures I. (3)** O'Brien
Evaluation of joint range of motion, strength, and body alignment. Interpretation and utilization of results.
Prerequisite: admission to program. 1 lecture, 6 hrs. lab. {Spring}

**361L.** [362.]**Human Physiology for Physical Therapists. (4)** Staff
Physiology of the human body with emphasis on cardiovascular, respiratory, and neuromuscular systems.
Prerequisite: 321L. 3 lectures, 3 hrs. lab. {Fall}

**370L.** [370.]**Kinesiology and Functional Anatomy. (3)** O'Brien
Biomechanics functional characteristics of muscle; analysis of therapeutic exercises; normal gait.
Prerequisite: 321L. {Fall}

§ Credit limited to students in Medical Laboratory Science Program.

**371L. Clinical Education I and Seminar. (1)** Clinical Associates, Erickson
Observation and supervised treatment of patients in affiliated hospitals and facilities correlated with evaluation, therapeutic procedures and exercise.
Prerequisite: admission to program. One-half day per week in clinical setting, 1 hr. seminar. CR/NC grading. {Fall}

**372L. Clinical Education II. (1)** Clinical Associates, Rutan
Supervised treatment of patients in affiliated hospitals and facilities correlated with therapeutic procedures and exercise.
Prerequisite: 371L. One-half day per week in clinical setting. CR/NC grading. {Spring}

**401L. Therapeutic Exercise III. (4)** Erickson
Neurophysiological approaches to treatment of neuromuscular dysfunction; facilitation and inhibition techniques.
Prerequisites: 302L, 361L. 2 lectures, 9 hrs. lab. {Fall}

**402L. Therapeutic Exercise IV. (3)** Erickson
Rehabilitation of brain and spinal cord injury; long-term disability, and terminal illness. Team concept and role release in comprehensive patient care.
Prerequisites: 401L, 441. 1 lecture, 6 hrs. lab. {Spring}

**422.** [421.]**Psychology of Disability. (2)** Psychiatry Staff
Psychosocial and cultural factors in aging and disability; personality changes and motivational techniques; sexual dysfunction in disability.
Prerequisite: 372L. {Fall}

**431. Health Care Systems and Delivery. (1)** Rutan
Historic bases, current status, and future prospects of the organization and operation of health care facilities and their implications for the practice of physical therapy.
Prerequisite: 372L. {Fall}

**441. Survey of Medical Science for Physical Therapists III and Seminar. (3)** Department of Neurology Faculty, O'Brien
Etiology, symptomatology, clinical course and management common central nervous system disorders. Physical therapy management of CNS disorders.
Prerequisites: 322, 361L. 2 lectures, 1 hr. seminar. {Fall}

**442. Survey of Medical Science for Physical Therapists IV. (2)** Staff
Medical and/or surgical management of problems related to metabolism, circulatory and cardio-respiratory systems; auto-immune disorders and collagen disease in adults and children.
Prerequisites: 341, 441. {Spring}

**451L. Evaluative Procedures II. (2)** Rutan
Electrodiagnostic, functional, and sensorimotor testing; neurodevelopmental testing; analysis of amputee gait; abnormal gait patterns, and special tests.
Prerequisites: 306L, 370. 1 lecture, 3 hrs. lab. {Fall}

**471L. Clinical Education III. (3)** Clinical Associates, Rutan
Supervised treatment of patients in affiliated hospitals and facilities correlated with advanced techniques of treatment. Increasing responsibility for evaluation and treatment planning.
Prerequisite: 372L. One day per week in clinical affiliations. CR/NC grading. {Fall}

**472L. Clinical Education IV. (3)** Clinical Associates, Rutan
Supervised treatment of patients in affiliated hospitals and facilities correlated with advanced treatment and evaluation techniques.
Prerequisite: 471L. One day per week in clinical affiliations. CR/NC grading. {Spring}

**475L. Clinical Education V. (9)** Clinical Associates, Rutan
Full-time experience in a variety of clinical settings. Increased responsibility in all aspects of patient care.
Prerequisite: satisfactory completion of all physical therapy courses. 15 weeks. CR/NC grading. {Summer}

**480. Administration and Supervision. (2)** Rutan
Planning and administration of physical therapy services; supervisory and consultation techniques.
Prerequisites: 310, 471L. {Spring}

**499. Individual Study. (1-3 hrs. per semester, to a maximum of 9)**
Supervised program of study of selected topics not covered in regular courses. May be repeated with change of content. Admission by approval of the P. T. program director. {Fall, Spring}

# RADIOLOGIC AND NUCLEAR MEDICINE TECHNOLOGIES

## RADIOLOGIC TECHNOLOGY

**101. Radiologic Physics. (4)** Kelsey
An introduction to the basic principles of electrical and radiation physics, and the operation of x-ray and auxiliary equipment, including demonstrations. {Spring}

**105. Introduction to Radiologic Sciences.** [Medical Terminology.]**(3)** Seubert
An introduction to the field of radiologic technology; the nature and value of ethics and professional conduct; medical terminology; basic concepts and techniques in nursing. {Summer}

**107. Principles of Radiographic Exposure. (3)** Seubert
Principles and theory of formulating radiographic techniques, exposure factors and the generation and properties of x-radiation. {Summer}

**108. Clinical Radiologic Technology I. (4)** Seubert, Cyphert
Introduction and practice in the principles of radiographic exposure, formulae, and technique. {Fall}

**161. Radiographic Procedures I. (5)** Seubert, Cyphert
Comprehensive review of skeletal/radiographic anatomy and study in the art of radiographic positioning of the structures of the human body, with laboratory. {Fall}

**163. Radiographic Procedures II. (4)** Seubert, Cyphert
Radiographic positioning of the structures of the human body. Clinical competency practice through role-playing techniques. {Spring}

**164. Clinical Radiologic Technology II. (4)** Seubert, Cyphert
Principles and practice of radiographic positioning of the patient utilizing an artificial phantom patient. {Spring}

**200. Radiographic Exposure Technique. (3)** Seubert
Continuation of 107 with laboratory exercises. {Fall}

**205. Radiation Protection. (2)** Christie
Principles of nuclear physics; radiation survey procedures and instrumentation; shielding and exposure concepts; Nuclear Regulatory Commission regulations.

**207. Clinical Radiologic Technology III. (8)** Seubert, Cyphert
Actual clinical radiographic positioning in radiographic suites under the supervision of certified radiologic technologists. {Summer}

**221. Radiographic Processing Technique. (2)** Seubert
Principles of the chemistry and processing (manual and automatic) of radiographs, the theory of the latent image, sensitometric and quality control principles, planning, equipping and operation of processing areas in a department of radiology. {Fall}

**260. Clinical Radiologic Technology IV. (6)** Seubert, Cyphert
Continuation of 207. {Fall}

**261. Clinical Radiologic Technology V. (6)** Seubert, Cyphert
Continuation of 260. {Spring}

**275. Imaging Systems.** [Imaging II.]**(2)** Seubert
Conventional and electronic imaging systems; introduction to other imaging modalities/disciplines such as nuclear medicine, radiation therapy, ultrasound and computerized tomography. {Spring}

**281. Radiographic Procedures III. (3)** Seubert, Cyphert
Principles and theory of the highly specialized procedures involving the administration of contrast media for the detection and diagnosis of pathology and/or traumatic initiated conditions. {Fall}

**300. Basic Radiation Biology. (1)** Staff
Survey of the acute, intermediate and late effects of ionizing radiation on biological levels of organization ranging from the molecule through the organism. {Spring}

**301.** [010.]**Research Problem. (1)** Seubert
Survey of literature related to research in the field of radiologic technology and radiology. {Fall, Spring}

**401. Introduction to Radiation Protection. (3)** Kelsey
A one semester survey of the principles and techniques of radiation protection as applied to nuclear fuel processing and power industries, health sciences and research applications.
Prerequisite: Senior or Graduate standing or permission of instructor.

## NUCLEAR MEDICINE TECHNOLOGY

**291. Survey of Medical and Surgical Diseases. (3)** Thornbury
Study of the nature and the cause of diseases and the changes that occur with disease and injury. {Spring}

**311. Introduction to Nuclear Medicine Technology. (3)** Christie
Basic concepts of radiopharmacy, nuclear instrumentation, and applicable anatomy and physiology; patient positioning; venesection techniques; medical and professional ethics; medical terminology; radiation safety; methods of patient care.
Corequisite: 313. {Summer}

**313. Clinical Nuclear Medicine I. (4)** Christie
Basic anatomy and pathophysiology, methods of localization, radiopharmaceuticals,nuclear instrumentation, and imaging techniques. {Summer}

**314. Clinical Nuclear Medicine II. (2)** Christie
Continuation of 313.
Prerequisite: 313. {Spring}

**315. Clinical Nuclear Technology I. (3)** Christie, Staff
The student is assigned to a rotational schedule in the division of nuclear medicine at UNM Hospital/BCMC. The student will gain experience performing diagnostic examinations with a variety of nuclear instrumentation.
Corequisite: 311. {Summer}

**316. Clinical Nuclear Technology II. (8)** Christie, Staff
A continuation of student rotation through the division of nuclear medicine at UNM Hospital/BCMC.
Prerequisite: 315. {Fall}

**317. Clinical Nuclear Technology III. (10)** Christie, Staff
A continuation of student rotation through the division of nuclear medicine at UNM Hospital/BCMC.
Prerequisite: 316. {Spring}

**320. In Vitro Nuclear Medicine. (2)** Christie
Principles and practical aspects of performing radioimmunoassay and competitive protein-binding assays, ferrokinetics, blood volumes, RBC survival, G.I. blood loss and Schilling's studies.
Prerequisite: 313. {Spring}

**321. Nuclear Radiation Biology. (1)** Staff
Interaction of alpha, beta, electromagnetic, and high LET particle radiations from nuclear interactions and disintegrations with biologic material.
Prerequisite: 311. {Spring}

**330. Clinical Radiopharmacy. (2)** Staff
Review of basic chemistry; Principles of radiopharmacy/radiochemistry including radiopharmaceutical preparation dose calculation, quality control, and federal/state regulations.
Prerequisite: 311. {Fall}

**341. Nuclear Instrumentation I. (2)** Christie
Principle and demonstration of ionization chambers, G-M tubes, scintillation and solid-state detectors, pre-amplifiers, amplifiers, pulse-height analysis, and read-out instrumentation.
Prerequisite: 311. {Fall}

**342L. Nuclear Instrumentation II. (1)** Christie
A continuation of 341; principles and theory of tomographic imaging techniques; lab practice in set-up, calibration and quality control of standard nuclear instrumentation; computer processing of data and image manipulation.
Prerequisite: 341.

**391. Special Problems. (1-3)** Staff
Supervised investigation of radiopharmaceutical effects and tissue localization.
Pre- or corequisites: 341-342L, Pharm 412. {Fall, Spring}

# MODERN AND CLASSICAL LANGUAGES

Sabine R. Ulibarri, Chairperson
Ortega Hall 235, 277-5907 and 5616

**PROFESSORS:**

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Tamara Holzapfel, Ph.D., State University of Iowa
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Marshall R. Nason, Ph.D., University of Chicago
Alfred Rodríguez, Ph.D., Brown University
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George F. Peters, Ph.D., Stanford University
Jose R. Reyna, Ph.D., University of California, Los Angeles
Warren S. Smith, Ph.D., Yale University
Jon M. Tolman, Ph.D., University of New Mexico

**ASSISTANT PROFESSORS:**

June D. C. Carter, Ph.D., University of Washington
Joan Dargan, Ph.D., Princeton University
E linda Gonzales-Berry, Ph.D., University of New Mexico
Sam L. Guyler, Ph.D., Cornell University
Natasha Kolchevska, Ph.D., University of California, Berkeley
Byron T. Lindsey, Ph.D., Cornell University
Diane Robin, Ph.D., University of Iowa

**LECTURER:**

Gerald M. Slavin, Ph.D., University of New Mexico

**GROUP REQUIREMENTS**

Courses taught in English and in the Modern Languages Division are not accepted toward fulfillment of foreign language group requirements.

**LANGUAGE LABORATORY**

The Department operates a language laboratory where students in beginning language classes go for weekly exercises. Any student having special difficulties may be assigned work in the laboratory. No extra credit is allowed for this work which is done chiefly in connection with regular courses.

**PLACEMENT OF FRESHMEN**

Students who have studied French or German in high school and who intend to continue the same language at the University are expected to take a placement examination administered by the Department. Normally students in other languages with two years of high school credit who intend to continue the study of the same language will take a second (102) semester course; students with three years will take a third (201) semester course; students with four or more years will take a fourth (202) semester or higher course. However, a student is free to select his own level and may elect to take the beginning course (101) for credit. Students who wish to begin the study of Italian or Portuguese must have studied six hours of another language.

**PERIOD MINOR**

Students majoring in any foreign language may take the period minor described under Comparative Literature offerings on p. 92.

## MODERN LANGUAGES

No major or minor study offered.

**101-102. Elementary Topics in Foreign Languages. (3, 3)‡**

**150. Introduction to Latin America. (3)**
(Also offered as Latin Am St 150.) This is an inter-disciplinary introduction to the geography, culture, economy, literature, society, politics, history, and international relations of the region. A lecture by faculty members from different departments will be followed by a discussion session each week. {Spring}

**201-202. Intermediate Topics in Foreign Languages. (3, 3)‡**

**223-224. Literary Questions. (3,3)**
(See Engl 223-224.)

**292L. Introduction to Linguistic Analysis. (3)**
(See Ling 292L.)

***457. Special Topics in Languages Studies. (3)‡**

***478. Seminar in International Studies. (3)** Slavin
(Also offered as Econ, Geog, Pol Sc, Soc 478.) Designed to provide seniors from any discipline an opportunity to apply an international perspective to their undergraduate training. Each student will present a term project drawing upon his/her particular background and relating it to international matters. Open only to seniors.

***480. Second Language Pedagogy. (3)**
(Also offered as SATE 480.) (See Ling 480.)

**497. Undergraduate Problems. (1, to a maximum of 6)**
Permission of instructor required.

***515. Medieval Paleography. (3)** White

***516. Old Provencal-Old Catalan. (3)** White

***517. Comparative Romance Philology. (3)** White

***518. Medieval Romance Lyric. (3)** Tomlins, White
Prerequisites: Span 442 or French 501.

***551. Graduate Problems. (1-6 hrs. per semester)**
Permission of instructor required.

***555. Seminar in Educational Linguistics. (3)‡**
(Also offered as Ed Fdn 555.) (See Ling 555.)

***580. Seminar in Modern Languages and Literature. (1-6)‡** (Also offered as Comp Lit 580.)

# AMERICAN INDIAN LANGUAGES

## APACHE

**§§105. Reading and Writing Apache. (3)**
For native speakers of Apache only. Emphasis on development of literary skills and use of Apache language and culture in the classroom.

**106. Reading and Writing Apache. (3)**
For native speakers of Apache only. Emphasis on development of literary skills and use of Apache language and culture in the classroom. (Offered through Continuing Education and on-site Teacher Training Project.)

## NAVAJO

No major or minor study offered.

**101-102. Elementary Navajo. (3, 3)**
{101—Fall, 102—Spring}

**§103-104. Basic Medical Navajo. (3, 3)**
Fundamentals of Navajo for students in the medical profession. Does not satisfy language requirement of College of Arts and Sciences. {Offered upon demand}

**105. Written Navajo. (3)**
Introduction to Navajo writing and reading; for native speakers of Navajo only. 101 and 105 may not both be counted for credit.

**201-202. Intermediate Navajo. (3, 3)**
Prerequisite: 101-102 or 105 or equivalent. {201—Fall, 202—Spring}

**206. Creative Writing and Advanced Reading. (3)**
For native speakers of Navajo only.
Prerequisite: 105 or permission of instructor.

**§*301-302. Advanced Navajo. (3, 3)**
Prerequisite: 202 or 206 or equivalent.

***401. Navajo Linguistics. (3)‡**
Study of selected aspects of the structure of the Navajo language. Emphasis on individual research.
Prerequisite: 202 or permission of instructor.

**497. Undergraduate Problems. (1, to a maximum of 6)**
Permission of instructor required.

***551. Graduate Problems. (1-6 hrs. per semester)**
Permission of instructor required.

## QUECHUA

No major or minor study offered.

§Offered through Continuing Education at Dulce.

***311-312. Introduction to Quechua. (3, 3)** Bills
Emphasis on the grammatical structure of Bolivian Quechua. Working knowledge of Spanish is desirable. {Offered upon demand}

## ZUNI

No major or minor study offered.

**§105. Reading and Writing Zuni. (3)**
For native speakers of Zuni.

# CHINESE

**101-102. Elementary Chinese. (4, 4)** Staff
{101—Fall, 102—Spring}

**201-202. Intermediate Chinese. (3, 3)** Staff
201 or equivalent is prerequisite for 202. {201—Fall, 202—Spring}

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

# CLASSICS

**MAJOR STUDY**

The total number of required course hours is 33. Anyone planning to major in Classics should consult as soon as possible with the Classics adviser to work out a projected schedule of courses; the adviser's final approval of such a schedule is required.

The student will choose A or B below, depending on whether he or she wishes to emphasize Latin or Greek.

A. 9 hours or Latin courses numbered above 200, including 303 or 304; 12 hours of Greek courses numbered above 250 (may include one Greek course taught in English translation).

B. 12 hours of Latin courses numbered above 200, including 303 and 304; 9 hours of Greek courses numbered above 250 (may include one Greek course taught in English translation).

And (in addition to A or B above): one course (3 hours) in Greek or Roman history and 9 additional hours of courses at 200 level or above, selected from the following areas: Greek or Roman Art History, Ancient History, Old World Archaeology, Ancient Philosophy, and Biblical Studies.

**MINOR STUDY**

Not offered.

# COMPARATIVE LITERATURE

The major in comparative literature is an interdepartmental major administered by the Department of English.

# FRENCH

**MAJOR STUDY**

30 hours in French courses numbered above 290, including 301, 302, 345, 346, 351, 352, and 405; and two years of college work in another foreign language (or reading knowledge).

**DOUBLE MAJOR STUDY**

Students who present two majors (French and another field) are required to take 24 hours in French courses numbered above 290, including 301, 302, 405, and either 345-346 or 351-352.

**MINOR STUDY**

15 hours in French courses numbered above 290, including 301 or 302 and 345 or 346.

**PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES**

**Students who have studied French in high school and who plan to continue it at the University are expected to take a placement test administered by the Department.** This examination is for advisement only, and no student will be forced to take a course for which he/she does not feel qualified. A student, if he/she so desires, may take the beginning course (101) for credit. If a student places above 101, it is possible by additional testing to earn credit for those courses by-passed.

§Offered at the University of New Mexico Gallup Branch only and on-site Teacher Training Project.

**FIRST-YEAR PROGRAM**

All beginning students should enroll in Elementary French (101-102), which provides a foundation in reading, writing, listening, and speaking for all subsequent courses.

101 and 102 may each be supplemented by a one-hour conversation course (103-104) and/or a one-hour reading course (107-108). The supplemental courses are intended for those students who wish to develop a specific language skill more rapidly than the basic course permits. They are taught as parallel courses to 101-102, and students must either be concurrently enrolled in the basic course or demonstrate equivalent preparation.

**101-102. Elementary French. (3, 3)** Book and Staff
{Fall, Spring}

**103-104. Elementary French Conversation. (1, 1)**
Supplementary course to French 101-102 for students interested in additional practice in speaking.

**107-108. Elementary French Reading. (1, 1)**
Supplementary course to French 101-102 for students interested in additional practice in speaking.

**201-202. Intermediate French. (3, 3)**
201—study of three modern French film classics. At least 2/3 of the class in French. 202—reading of modern French literary masterpieces. Entire course in French.

**203. Intermediate French Conversation. (3)**
Designed primarily to give qualified students of 201-202 extra practice in the oral use of the language; therefore, it is recommended that it be taken concurrently with 201 or 202. Enrollment limited to 15 students.

**204. Living French: Film, Radio, and Journalism. (3)**
Development of competence in understanding and speaking French through the study of a feature film, French radio broadcasts, and journal and newspaper articles. Conducted in French. To be taken concurrently with or after French 202.

**207. Introduction to Translation. (3)** Staff
May be taken concurrently with or after 202. Fundamental principles of translating: how to approach a text and assess its contents, style and particular problems; how to go beyond literal translation and work towards an accurate, polished translation.

**275-276. Beginning French (Accelerated). (3, 3)**
275 and 101-102 may not both be counted for credit; 276 and 201-202 may not both be counted for credit.
Prerequisite: 6 hrs. (or equivalent) of another language.

**285. Readings in the Social Sciences. (3)** Staff
Designed to acquaint students with contemporary French thought in the areas of the social sciences or with previous outstanding contributions by French thinkers. Readings will include books, articles from scholarly journals, newspaper articles.

**286. Readings in the Social Sciences. (3)** Staff
Designed to acquaint students with contemporary French thought in the areas of the sciences or with previous outstanding contributions by French scientists. Readings will include books, articles from scholarly journals, materials previously untranslated.

**287. Readings in the Humanities. (3)** Staff
Designed to acquaint students with contemporary French thought in the areas of the humanities or with previous outstanding contributions by French thinkers. Readings will include books, articles from scholarly journals, newspaper articles.

**288. Readings in the Fine Arts. (3)** Staff
Designed to acquaint students with contemporary French thought in the areas of the fine arts or with previous outstanding contributions by French artists, critics, and thinkers. Readings will include books, articles from scholarly journals, newspaper articles.
French 202 or the equivalent is prerequisite to all courses listed below, except 335.

***301-302. Advanced Composition and Conversation. (3, 3**
Prerequisite: 202 or the equivalent.

***307. Intermediate Translation. (3)**
Study of principles and techniques of translating through comparative stylistics.
Prerequisite: 301 and 302.

***335. French Literature in Translation. (3)** Murphy
Does not count for the French major or minor.

***345-346. French Civilization. (3, 3)**
345—origins to French Revolution; 346—French Revolution to the present. 346 conducted in French.
Prerequisite: 202 or the equivalent.

***351-352. Survey of French Literature. (3, 3)** Murphy, Senninger, White
351—origins to 1800; 352—1800 to present.

***365-366.** [265-266.]**French Reading for Graduate Students. (3, 3)**
Accelerated course for graduate reading requirements. 365 emphasizes fundamentals of grammar; 366 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Undergraduates may not enroll without permission of instructor.

***405. French Phonology. (3)** Book
Phonetic and phonemic system of French. Required for the undergraduate major.

***411. French Poetry of the Renaissance. (3)**
Development of French poetry from Marot through M. Regnier with special stress on La Pleiade (Du Bellay and Ronsard).

***412. French Non-Poetic Literature of the Renaissance. (3)** Murphy
Major concentration on Rabelais and Montaigne with briefer study of some of the minor prose writers of the period.

***422. French Dramatic Literature of the Classical Period. (3)** White
Representative plays of Corneille, Moliere, and Racine.

***423. French Non-Dramatic Literature of the Classical Period. (3)** White
Lyric poetry and prose from Pascal to the end of the reign of Louis XIV.

***431-432. French Literature of the Eighteeth Century. (3, 3)** Murphy
431—through 1750, emphasis on Montesquieu and Voltaire; 432—since 1750, emphasis on Diderot and Rousseau.

***440. Teaching of French. (3)** Book
(Also offered as SATE 440.) Required of all teaching assistants. {Fall}

***441. French Prose Fiction of the Nineteenth Century. (3)**
The most representative novels of the Romantics, Realists, and Naturalists.

***442. French Dramatic Literature of the Nineteenth Century. (3)** Senninger
Survey of the drama from the melodrama and neoclassicism through the Théatre dart of Paul Fort.

***443. Practicum in Nineteenth-Century French Theatre. (1-3)** Senninger
May be taken together with 442. Study through a live experience that reconstructs the theater as part of the political, sociological, and artistic context of the time.

***451. French Prose of the Twentieth Century. (3)** Book
Selected novels from Gide and Proust through the nouveau roman.

***452. Twentieth-Century Theater. (3)** Book
Study of the fourteen plays written in French which have shaped the modern theater throughout the world. The plays are read and discussed in French. Non-French majors may participate in English.

***453. Practicum in Twentieth-Century French Theatre. (1-3)** Senninger
May be taken together with 452. Study through a live experience that reconstructs the theatre as part of the political; sociological, and artistic context in which it developed. 443 and 453 may not both be counted toward the French major.

***460-461. Survey of French Poetry. (3, 3)** Senninger
460—to 1800; 461—since 1800.

***490. Seminar in French Literature. (3)‡**
Combination undergraduate-graduate seminar. Topics include French or Francophone literature, especially that of Quebec.
Prerequisites: 351-352.

**497. Undergraduate Problems. (1, to a maximum of 6)**
Permission of instructor required.

**498. Reading and Research for Honors. (3)**
Open to juniors and seniors approved by the Honors Committee.

**499. Honors Essay. (3)**
Open only to seniors enrolled for departmental honors.

***500. Teaching Practicum. (1)‡** Book
Required of all new teaching assistants in French; others by permission of instructor only. {Fall}

***501. History of the French Language. (3)** White
Required for the M.A. degree.

***502. Readings in Medieval French Literature. (3)** White

***503. Proseminar in Medieval French Genres. (3)‡** White

***504. French Stylistics and "Explication de Textes". (3)**
Exceptional undergraduates may enroll with permission of instructor and Graduate Dean.

***505. Introduction to Research Methods. (3)** Senninger
Required for the M.A. degree.

***510. History of French Literary Criticism. (3)**
Required for the Ph.D. degree.

***515. Medieval Paleography. (3)** White
(See M Lang 515.)

***516. Old Provençal-Old Catalan. (3)** White
(See M Lang 516.)

***517. Comparative Romance Philology. (3)** White
(See M Lang 517.)

***518. Medieval Romance Lyric. (3)** Tomlins, White
(See M Lang 518.)

***520. French Thought. (3)** Murphy, Senninger

***524. Seminar in Nineteenth-Century French Literature. (3)‡**

***551. Graduate Problems. (1-6 hrs. per semester)**
Permission of instructor required.

***560. Seminar in French Literature. (3)‡**

***599. Master's Thesis. (1-6 hrs. per semester)**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

## COURSES OFFERED AT THE TAOS FRENCH SUMMER SCHOOL OF NEW MEXICO

The courses listed below are offered only through the Taos French Summer School. Credits earned for these courses may be counted toward the French major in any of the three options, depending on course content. For information about the Summer School contact the French Section office.

**370. Advanced Language Instruction and Conversation. (2-4)** Staff
Intensive language work at an advanced level, stressing controlled conversation.

***380. Lectures and Discussions on French Studies. (2-4)** Staff
Topic will vary. Team taught course presenting a multidiscipline approach to problems relating to French literature and culture.

**385. Seminars in French Studies. (1-4)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies. Topics will deal with specific problems in French literature, culture, and language.

**390. Workshop in French Studies. (1-2)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies. Informal discussions on topics relating to French culture; practical language work.

***470. French Stylistics. (2-4)** Staff
Intensive study of French prose styles. Extensive writing practice.

***485. Advanced Seminars in French Studies. (1-4)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies. Topics will deal with specific problems of French literature, culture, and language on an advanced level.

***585. Graduate Seminars in French Studies. (2-4)**
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies.

# GERMAN

### MAJOR STUDY

A student may select one of the following three options with the approval of the German adviser:

**1. Language Emphasis.** 27 hours in German above 300 plus two years, or the equivalent, of college work in another foreign language. German hours to be distributed as follows:

| | |
|---|---|
| Language: | 301, 302, 405, plus 6 additional hours of course work in German language |
| Literature: | 307 |
| Culture: | 345 or 346 |
| Electives: | 6 additional hours of course work in German above 300 (one approved linguistics course may be substituted for 3 hours of German) |

**2. Literature Emphasis.** 33 hours above 300, to be distributed as follows:

| | |
|---|---|
| Literature: | 307, plus 15 additional hours of literature courses, at least 9 of which must be in German. 6 hours may be fulfilled by upper-division literature courses in another foreign language, English, comparative literature, or literature in translation. |
| Language: | 301, 302 |
| Culture: | 345 or 346 |
| Electives: | 6 hours of additional course work in German above 300 |

**3. Culture Emphasis.** 33 hours, to be distributed as follows:

| | |
|---|---|
| Culture: | 345, 346, plus 9 hours of additional course work in German culture, including approved courses in other departments. |
| Language: | 301, 302 |
| Literature: | 307, plus 3 additional hours of course work in German literature which may be fulfilled by German 336. |
| Electives: | 6 hours of additional course work in German above 300. |

### MINOR STUDY

15 hours in German courses numbered above 300.

### PLACEMENT EXAMINATION AND EXAMINATION TO VALIDATE CREDIT FOR PREVIOUS WORK

**Students who have had previous exposure to German in high school or elsewhere and who plan to continue at the University are expected to take a placement test administered by the Department.** This examination is for advisement only and no student will be forced to take a course for which he/she does not feel qualified. A student, if he/she so desires, may take the beginning course (101) for credit. If a student places above 101, it is possible by additional testing to earn credit for those courses by-passed.

## LANGUAGE COURSES

### FIRST-YEAR PROGRAM

All beginning students should enroll in Basic German (101-102), which provides a foundation in reading, writing, listening, and speaking for all subsequent courses.

101 and 102 may each be supplemented by a two-hour conversation course (103-104) and/or a one-hour reading course (107-108). The supplemental courses are intended for those students who wish to develop a specific language skill more rapidly than the basic course permits. They are taught as parallel courses to 101-102, and students must either be concurrently enrolled in the basic course or demonstrate equivalent preparation.

**101-102. Basic German. (3, 3)** Jespersen, Staff
Foundation course for all beginning students, whether they are primarily interested in reading or speaking. 101 may be supplemented by 103 and/or 107; 102 may be supplemented by 104 and/or 108. {Fall, Spring}

**103-104. Elementary German Conversation. (2, 2)** Jespersen, Staff
Supplementary course to German 101-102 for students interested in additional practice in speaking. Intensive use of German in the classroom based on a variety of audio-visual stimuli. Students not concurrently taking 101-102 must obtain permission of instructor to enroll.

**107-108. Elementary German Reading. (1, 1)** Jespersen, Staff
Supplementary course to German 101-102 for students interested in additional practice in reading. The course stresses individual study, using a variety of reading texts.

**SECOND-YEAR PROGRAM**
All second-year German students should enroll in Intermediate German (201-202), which continues the development of reading, writing, speaking, and listening. 201 and 202 may each be supplemented by a 2-hour conversation course (203-204) and/or a reading course (207-208) for either 1 or 2 hours credit. The supplemental courses are intended for students who wish more intensive practice in a specific language skill than the intermediate course alone permits. They are taught as parallel courses to 201-202 but are open in special cases to any student with a first-year foundation of equivalent preparation. Those intending to go beyond the second year are encouraged to take the conversation course (203-204) in addition to 201-202. Transfer students and those who have studied German in high school should take the placement test and/or seek advice from a member of the German staff.

**201-202. Intermediate German. (3, 3)** Staff
Continues development of reading, writing, speaking, and listening at the second-year level.

**203-204. Intermediate German Conversation. (2, 2)**
Supplemental course to German 201-202 for students desiring additional practice in speaking and listening. Intensive use of German in the classroom. May be taken by students not concurrently enrolled in 201-202 only with the permission of the instructor.

**207-208. Intermediate German Reading. (1-2, 1-2)**
Supplemental course to German 201-202 for students desiring additional practice in reading. The course stresses individual study, using a variety of advanced reading texts. Open to all students with a first-year foundation or equivalent preparation.

**256. German Folksongs. (1)‡**
Informal study and singing of German folksongs. May be repeated to a maximum of 3 hours credit.

**ACCELERATED, UPPER-DIVISION, AND GRADUATE LANGUAGE COURSES**
German 202 or equivalent is prerequisite for all courses below except 275-276 and 365-366.

**275-276. Accelerated Beginning German. (3, 3)** Staff
Intensive course for language majors and language enthusiasts. 101-102 and 275-276 may not both be counted for credit.

**301-302. Advanced German. (3, 3)** Hannemann, Pabisch
Written and oral work for the third-year student, using a variety of literary and cultural material. 302 stresses the geography, culture and politics of the two Germanies, Austria, and Switzerland.

**303. Advanced German Conversation. (1)‡**
Small conversation groups for advanced students. It is recommended that this course be taken concurrently with 301-302. May be repeated to a maximum of three hours credit.

**308. Advanced German Reading. (1)‡** Pabisch
Intensive reading on an individual basis in fields of the student's choice. May be repeated to a maximum of three hours credit.

**365-366.** [265-266.]**German Reading for Graduate Students. (3, 3)**
Accelerated course for graduate reading requirements. 365 emphasizes fundamentals of grammar; 366 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Undergraduates must have permission of instructor to enroll.

**405. Advanced Grammar and Phonology. (3)**

**445. Teaching of German. (3)** Jespersen
(Also offered as SATE 445.) Does not count for the German major or minor.

**446. The Art of Translating. (3)** Peters
Study of methods of translating from German into English, both orally and in writing. Practical work in translation.

**LITERATURE COURSES**

**307. Introduction to German Literature. (3)** Peters
307 is a prerequisite for all literature courses listed below, except 336.

***336. Special Topics in German Literature in Translation. (3)‡**
Topics will deal with individual authors, genres, or periods such as "Hermann Hesse and the Self" and "Kafka and Creativity". May count for a major but not for a minor.

***351. The Age of Goethe. (3)**

***352. Nineteenth-Century German Literature. (3)**

***353. Twentieth-Century German Literature. (3)**

***451. The Novel. (3)**

***452. The Drama. (3)**

***453. Lyric Poetry. (3)**

***454. The "Novelle". (3)**

**CULTURE COURSES**

**105. Introduction to Germany. (2)**
Designed primarily for students learning German, this course presents an introduction to major aspects of German culture: customs, literature, music, art, history. Team taught in English.

***345. Introduction to German Civilization. (3)**
Rapid survey of German geography and of historical and cultural developments from early beginnings to the present.

**346. German Cultural History. (3)** Staff
Study of Germany's major contributions in the area of cultural history.

***401. Contemporary German Cultures. (3)** Staff
Study of present-day society and culture in the German-speaking countries using current materials.

**GENERAL COURSES**

***450. Special Topics in German Studies. (3)‡** Staff
Topics will deal with specific problems in German language, literature, or culture. May apply to requirements in any of the three options for the German major, depending on course content.

**480. Senior Colloquium in German. (1)‡** Staff
One-hour informal courses for advanced students, dealing with special topics relating to language, literature, or culture. May apply to requirements in any of the three options for the German major, depending on course content.

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

**498. Reading and Research for Honors. (1, to a maximum of 6)**
Open to juniors and seniors approved by the department honors committee.

***551. Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

## COURSES OFFERED AT THE DEUTSCHE SOMMERSCHULE VON NEW MEXICO

The courses listed below are offered only through the Taos German Summer School. Credits earned for these courses may be counted toward the German major in any of the three options, depending on course content. For information on the Summer School contact the German Section office.

**370. Advanced Language Instruction and Conversation. (2-4)** Staff
Intensive language work at an advanced level, stressing controlled conversation.

***380. Lectures and Discussions on German Studies. (2-4)** Staff
Topic will vary. Team-taught course presenting a multidiscipline approach to problems relating to German literature and culture.

**385. Seminars in German Studies. (2-4)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies. Topics will deal with specific problems of German literature, culture, and language.

**390. Workshops in German Studies. (1)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies. Informal discussions on topics relating to German culture; practical language work.

***410. German Stylistics. (2-4)** Staff
Intensive language work designed to introduce students to the complexities of oral and written style.

***470. Advanced German Stylistics.** [German Stylistics.]**(2-4)** Staff
Intensive study of German prose styles. Extensive writing practice.

***485. Advanced Seminars in German Studies. (1-4)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies. Topics will deal with specific problems of German literature, culture, and language on an advanced level.

***585. Graduate Seminars in German Studies. (2-4)** Staff
Each section in this course will focus on a different topic. Titles of individual sections will vary as content varies.

# GREEK

**MAJOR STUDY**
Not offered.

**MINOR STUDY**
12 hours in courses numbered above 200, including 301 and 302.

**101-102. Elementary Greek. (3, 3)** Smith
101—introduction to Classical Greek; 102—readings from simple prose, including the New Testament. (Alternates yearly with 301-302.) {101—Fall, 102—Spring}

***301-302. Classical Greek. (3, 3)††**
Prerequisite: 102 or equivalent.

***341. Greek Mythology. (3)** Smith
Theory of origin and use of myths examined from point of view of psychologist, anthropologist, and religious historian.

***345. Topics in Greek Literature in Translation. (3)‡** Smith
Topic will deal with individual authors, genres, or periods.

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

***551. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

# ITALIAN

No major or minor study offered.

**275-276. Beginning Italian (Accelerated). (3, 3)**
Prerequisite: 6 hrs. (or equivalent) of another language. {Fall, Spring}

***307. Introductory Readings in Prose. (3)**
Prerequisite: 276 or equivalent.

***308. Introductory Readings in Poetry. (3)**
Prerequisite: 276 or equivalent.

***475. Dante in Translation. (3)** White
Principally the **Vita Nuova** and the **Divine Comedy.**

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

***551. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

# LATIN

**MAJOR STUDY**
Not offered.

**MINOR STUDY**
12 hours in courses numbered above 200.

**PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES**
**Normally students with two years of high school credit in Latin will take the second (102) semester course; students with three years will take the third (201) semester course; students with four years will take the fourth (202) semester or higher course. However, a student may elect to take the beginning course (101) for credit.**

**101-102. Elementary Latin. (3, 3)**
{Fall, Spring}

**201-202. Intermediate Latin. (3, 3)**
Prerequisites: 101-102 or the equivalent.

***303-304. Readings in Latin Literature. (3, 3)†† Smith**
303—Republican literature; 304—Empire literature.
Prerequisite: 202 or equivalent.

***344. Topics in Latin Literature in Translation. (3)‡ Smith**
Topic will deal with individual authors, genres, or periods.

***351. Accelerated Latin. (3)**
Essentials of basic Latin grammar, morphology, and vocabulary, with emphasis on etymology and a comparative study of Latin and its relationship to the Modern Romance Languages and English.

***352. Accelerated Latin—Reading. (3)**
The evolution from Classical Latin to Medieval Vulgar Latin and its relationship to the Modern Romance Languages and English; the reading of selected Classical and Medieval texts.

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

***551. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

## PORTUGUESE

**MAJOR STUDY**
30 hours in Portuguese courses, including 301, 307, 6 hours of Portuguese literature, 12 hours of Brazilian literature, and two years college work in another foreign language (or reading knowledge).

**MINOR STUDY**
18 hours in Portuguese courses.

**275-276. Beginning Portuguese (Accelerated). (3, 3)**
Prerequisite: 6 hrs. (or equivalent) of another language.
{Fall, Spring}

**277-278. Portuguese Drill. (2, 2)**
Corequisite: 275-276. {Fall, Spring}

General prerequisites for the following courses: 301 and 307 or the equivalent. 307 may precede 301 in the student's schedule.

***301. Advanced Composition and Conversation. (3)**
{Fall, Spring}

***307. Introductory Readings in Literature. (3)**
{Spring}

***421. Modern Brazilian Drama. (3)**
Representative plays from the eighteenth century to the present.

***446. Luso-Brazilian Civilization. (3)**

***451. Survey of Portuguese Literature. (3)** Tomlins
Representative readings from the medieval **Cancioneiros** to Modernism and later trends.

***452. Contemporary Portuguese Literature. (3)** Tomlins
Investigation of the impact of the European vanguard on twentieth-century Portuguese letters; lyric poetry and Neo-Realism in the novel.

***457. Brazilian Poetry from the Colonial Period to Modernism. (3)** Tomlins
Arrival of European Renaissance and Baroque modes on Brazilian soil: Neo-Classicism, Arcadism, Romanticism, Parnassianism, and Symbolism.

***458. Brazilian Poetry from Modernism to the Present. (3)** Tomlins
Impact of European vanguard; antecedents of Modernism and the generations of the movement; concretism and recent developments.

***461. Brazilian Prose Fiction and Essay from Beginnings to Modernism. (3)** Tomlins
Readings in the major trends of Brazilian prose; the Baroque sermon, nineteenth-century developments, Machado de Assis, **Os Sertões.**

***462. Brazilian Prose Fiction and Essay from Modernism to the Present. (3)** Tomlins
Novel and short story from revolutionary Modernism: the new regionalism, the psychological novel, the political novel. The essay as an investigation of Brazilian reality.

***465. Portuguese Literature to 1600. (3)** Tomlins
Readings in the various medieval genres with special emphasis on Hispano-Arabic lyric and the **Cancioneiros;** the **Cancioneiro Geral** and the Italian modes; Gil Vicente and his school; **El Camoës** and the lyric, the drama, and the epic; Erasmian humanism.

***496. Iberian History since 1700. (3)**
(See Hist 396.)

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

***501. History of the Portuguese Language. (3)** White
Required for the M.A. degree.
Prerequisite: Latin 351 or equivalent.

***504. Seminar in Ibero-American Studies. (3)** Dolkart, Floyd, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Hist, Ib Am, and Span 504.) {Fall, Spring}

***515. Medieval Paleography. (3)** White
(See M Lang 515.)

***516. Old Provençal-Old Catalan. (3)** White
(See M Lang 516.)

***517. Comparative Romance Philology. (3)** White
(See M Lang 517.)

***518. Medieval Romance Lyric. (3)** Tomlins, White
(See M Lang 518.)

***551. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

***560. Seminar in Portuguese Literature. (3)‡**

***570. Seminar in Brazilian Literature. (3)‡**

***599. Master's Thesis. (1-6 hrs. per semester)**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

## RUSSIAN

**MAJOR STUDY**
Not offered. See Russian Studies.

**MINOR STUDY**
18 hours in Russian courses beyond the 200-level. One course in Russian literature in translation may be counted toward the minor.

**PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES**
**Normally students who have studied Russian in high school should take 102 or 201. A placement exam may be given on consultation with the Russian adviser. This exam can also serve as a challenge exam so that the student may receive credit for the course covered by the study of Russian in high school or elsewhere. However, the student may choose to repeat the beginning course for credit.**

**101-102. Elementary Russian. (4, 4)**
{101-Fall, 102-Spring}

**103-104. Elementary Russian Conversation. (1, 1)**
Supplementary course to Russian 101-102 for students interested in additional practice in speaking. Students not concurrently taking 101-102 must obtain permission of instructor to enroll.

**201-202. Intermediate Russian. (3, 3)**
Prerequisites: 101-102 or the equivalent.

**203. Russian Conversation. (1-3)** Lindsey
For intermediate students who wish to improve speaking and writing skills. May be repeated to a maximum of three hours credit.
Pre- or corequisite: 201-202.

**253. Practicum in Russian Theater. (3)‡**
Students read and stage Russian plays. Performances may be recorded for subsequent use. Special attention is given to pronunciation, intonation. Open to students of all levels.
Prerequisite: 102 or the equivalent.

**275-276. Accelerated Beginning Russian. (3, 3)** Staff
Primarily designed for students with previous exposure to either Russian or another language. Emphasis on acquiring a reading knowledge of Russian. 101-102 and 275-276 may not both be counted for credit.

***301. Advanced Russian. (3)** Lindsey, Kolchevska
Vocabulary building, basic grammar review, and special attention to idiomatic Russian. Readings from recent Soviet literature.
Prerequisite: 202 or equivalent.

***302. Contemporary Russian. (3)** Lindsey, Kolchevska
Emphasis on all four language skills, especially reading. Students will cover selections from both pre-revolutionary and Soviet writers. The structure of Russian is reviewed in detail. Language lab not required.

***303. Advanced Russian Conversation. (1)‡** Lindsey, Kolchevska
Intensive practice in Russian conversational patterns and contemporary slang leading to moderate fluency.
Prequisite: 202 or the equivalent. It is recommended that the course be taken concurrently with 301-302. May be repeated for a maximum of three hours credit.

**307. Introduction to Russian Literature. (3)** Lindsey, Kolchevska
Readings from Pushkin, Lermontov, Dostoevsky, Tolstoy, and Chekhov. Emphasis on increased reading comprehension in Russian and on major aspects of the writers.

***308. Russian Poetry. (3)** Lindsey
From Pushkin to the present. Conducted in Russian.

***338. Russian Literature in Translation. (3)** T. Holzapfel, Lindsey

***340. Topics in Russian Literature in Translation. (3)‡** Lindsey, Kolchevsak
(Also offered as Comp Lit 340.) Topics will deal with individual authors, genres, or periods.

***343. Soviet Literature in Translation. (3)** Kolchevska
(Also offered as Comp Lit 343.) Readings in Russian literature since the revolution: Sholokhov, Malakovski, Babel, Pasternak, Solzhenitsyn.

***345. Russian Civilization. (3)** Kolchevska, Lindsey
Required for the major in Russian Studies. A study of the major creative works in literature, music, art, and architecture from Kievan times to the present. In Russian.

**365-366. [265-266.] Russian Reading for Graduate Students. (3, 3)**
Accelereated course for graduate reading requirements. 365 emphasizes fundamentals of grammar; 366 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Undergraduates must have permission of instructor to enroll.

***401-402. Russia Today. (3, 3)** Lindsey, Kolchevska
Current language and literature including samizdat.

***490. Seminar in Russian Literature. (3)‡** Lindsey, Kolchevska
Topic will deal with individual authors, genres, or periods.

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

**SPANISH**

**MAJOR STUDY**

Under either Plan A or Plan B, 30 hours of Spanish courses above 290 and completion of work in another foreign language at the level of 202 or 276 (or reading knowledge) Students who do not speak Spanish natively should take 203 concurrently with 201 or 202.

**Plan A. Hispanic Literature:** Required courses are 301, 302, 351, 352 or 356, 340, plus at least 9 additional hours of literature courses from Section III below.

**Plan B. Hispanic Language and Culture of the Southwest** required courses are 301-302, 297, 351, 356 and 345 or 346 plus 12 additional hours taken from areas II, III, IV, V below in any combination.

Courses in Plan B may be applied to the bilingual/cultural certification requirements, which the candidate may fulfill by taking 6 hours outside the department.

**MINOR STUDY**

15 hours in Spanish courses numbered above 290, including 301-302, **and at least six additional hours of literature courses from Seciton III below.**

**PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES**

**Unless prior approval is obtained from the Department** in writing to enter a lower course, students with two years of high school Spanish must enroll in the second semester course (102 or 112), students with three years must take the third semester course (201 or 211), and students with four or more years must take the fourth semester (202 or 212) or higher course. Credit will be awarded, through th

challenge procedure, for lower courses, upon successful completion of the higher course.

**COURSES FOR SPANISH-SPEAKING STUDENTS**

New Mexican and Southwestern students who speak Spanish natively at home or with friends should take the specially designed sequence 112-211-212. A placement test is given in these courses on the first day of classes. This test is for advisement only; no student will be forced into a higher course for which he does not feel qualified. These courses are not designed for foreign students whose education has been in Spanish.

**I. LANGUAGE**

**101-102. Elementary Spanish. (4, 4)** Laqmadrid, Staff
For students who do not speak Spanish natively and who have had little or no previous exposure to Spanish. 101 or equivalent is prerequisite for 102. {Summer, Fall, Spring}

**112. Elementary Spanish for Spanish Speakers. (3)** Staff
For Southwest Spanish speakers who have had little or no previous exposure to written Spanish. Standard Spanish, grammar, vocabulary. Cultural readings. 101-102 and 112 may not both be counted for credit. {Fall, Spring}

**120. Workshop in Conversational Spanish. (1-3)** Staff
Conversational Spanish on the freshman and sophomore levels. For off-campus students only, through the Division of Continuing Education. May not be used to satisfy language requirements. May be repeated for a maximum of 3 credit hours.

**201-202. Intermediate Spanish. (3, 3)** Bergen, Staff
For students who do not speak Spanish natively and who have completed 102 or three or more years of high school Spanish. 201 or equivalent is prerequisite for 202. {Summer, Fall, Spring}

**203. Intermediate Spanish Conversation. (3)** Bergen, Staff
Extra oral practice in small classes for nonnative speakers.
Prerequisite or corequisite: 201 or 202.

**205. Spanish Commercial Correspondence. (2)**

**207. Conversational Spanish. (3)**

**211-212. Intermediate Spanish for Spanish Speakers. (3, 3)** Staff
For Southwest Spanish Speakers who have completed 112 or three or more years of high school Spanish. 201-202 and 211-212 may not both be taken for credit.
Prerequisites: 211 or equivalent is prerequisite for 212.

**275-276. Accelerated Beginning Spanish. (3)** Carter
Intensive course designed especially for language majors and language enthusiasts. The sequence 275-276 and 101-102-201-202 or 112-211-212 may not both be counted for credit.
Prerequisite: 6 hrs. or equivalent of another language.

**277-278. Spanish for Professionals. (3, 3)** Staff
Specially designed course for professionals in the fields of medicine, law, business, office management. Attention given to specialized professional vocabularies.

***301. Advanced Grammar and Composition. (3)**
Thorough review of grammar and usage, with readings, conversation, expository writings.
Prerequisite: 202 or 212 or equivalent. {Fall, Spring}

***302. Advanced Composition and Conversation. (3)**
Emphasis on oral and written expression, with readings and literary criticism.
Pre- or corequisite: 301 or equivalent. {Fall, Spring}

***315. Creative Writing for New Mexico Spanish Speaking Students. (3)** Ulibarri
Writing or original short stories and poems, with emphasis on use of New Mexican Spanish.
Prerequisite: 302. {Spring}

**365-366.** [285-286.] **Spanish Reading for Graduate Students. (3, 3)** Staff
Accelerated course for graduate reading requirements. 365 emphasizes fundamentals of grammar; 366 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Undergraduates must have permission of instructor to enroll.

***401. Spanish Stylistics. (3)** Fernandez
Literary style, figurative language, literary genres and versification, aesthetics, text analysis. Good command of Spanish essential.
Prerequisite: 301-302. {Fall}

**II. LINGUISTICS, PHILOLOGY, AND METHODOLOGY**

***311. Southwest Spanish. (3)**
Analysis of Spanish of U.S. Southwest, especially New Mexico; comparisons with standard Spanish.
Prerequisite: 212 or 302 or equivalent.

***340. Spanish Phonology. (3)** Lamadrid
Introduciton to Spanish phonetics and phonemics.
Prerequisite: 301. {Fall, Spring}

***341. Spanish Linguistics for Elementary Teachers. (3)** Lamadrid
Selected aspects of Spanish phonology, morphology, and syntax; theory and application to bilingual teaching. Taught in Spanish. Does not count toward Spanish major or minor.
Prerequisite: 302 and Ling 292 or equivalent. {Offered upon demand.}

***342. Spanish Linguistics for High School Teachers. (3)** Lamadrid
With approval of adviser, may be counted toward Spanish major.
Prerequisite: 302; suggested pre- or corequisites: 340 and SATE 361.

***441. Teaching of Spanish. (3)** Lamadrid
(Also offered as SATE 441.) Applies linguistic basis acquired in 342 to problems of teaching. May be counted for teaching certificate but not for Spanish major or minor. Students are advised to take 441 prior to or parallel with student teaching.
Prerequisite: 342.

***442. History of the Spanish Language. (3)** Bergen
Major features of evolution from Vulgar Latin to modern Spanish. Required of all candidates for graduage degrees. Suggested pre- or corequisite: 340.

***443. Spanish Morphology. (3)** Bergen
Introduction to linguistics and appleid linguistics; analysis and teaching of word formation; emphasis on verb system. Required of all T.A.s and Ph.D. candidates.
Pre- or corequisite: 340. {Fall}

***444. Structure of Spanish. (3)** Bills
Descriptive analysis of phonological, grammatical, and semantic structure of contemporary Spanish; emphasis on morphology and syntax. Suggested prerequisite: 443.

***500. Teaching Practicum. (1)** ‡ Bergen, Lamadrid
At least two semesters required or all new teaching assistants in Spanish; others by permission of instructor only. {Fall, Spring}

***515. Medieval Paleography. (3)** White
(See M Lang 515.)

***516. Old Provençal-Old Catalan. (3)** White
(See M Lang 516.)

***517. Comparative Romance Philology. (3)** White
(See M Lang 517.)

***540. Latin American Dialectology. (3)** Bills
Prerequisite: 442.

***541. Recent Research on the Teaching of Spanish. (3)** Bergen, Lamadrid
Required of M.A.T.S. candidates.
Prerequisite: 443. {Spring}

***543. Spanish Syntax. (3)** Bergen
Prerequisite: 443. {Spring}

***549. Seminar in the Language of Spain or Spanish America. (3)** ‡ Bergen, Bills, Lamadrid

III. LITERATURE

**307. Introduction to Hispanic Literature. (3)** Ulibarri
Panoramic view of Spanish literature and literary criticism from beginning to present.
Prerequisite: 202 or 212 or equivalent.

Spanish 307 or equivalent is prerequisite for all literature courses below except 334 and 337.

A. PENINSULAR LITERATURE

***337. Spanish Literature in Translation. (3)** MacCurdy, Rodriguez
Does not count for the Spanish major or minor.

***351-352. Survey of Spanish Literature. (3, 3)** Fernandez, Guyler, MacCurdy
351-eleventh to seventeenth centuries; 352-eighteenth, nineteenth, and twentieth centuries. {351-Fall, 352-Spring}

**370. Topics in Spanish Literature. (3)** ‡
For undergraduates only. Variable topics will deal with individual periods or genres.

***415. Eighteenth-Century Spanish Literature. (3)** Rodriguez
Major authors and works.

***416. Nineteenth-Century Spanish Literature. (3)** Fernandez, Rodriguez
Analysis of development from costumbrista and romantic novels to regional and naturalistic novels.

***418. Spanish Novel Since the Civil War. (3)**
Major novelists of the post-Civil War and contemporary generations.

***419. Spanish Poetry. (3)** Ulibarri
Stylistic, linguistic, and analytical approach to selected poems and poets of each literary epoch from beginning to present. {Spring}

***420. Modern Spanish Drama. (3)**
Development of Spanish theatre in nineteenth and twentieth centuries, since Romanticism, with major stress on contemporary.

***421. Lope de Vega and His Contemporaries. (3)** MacCurdy
Survey of Spanish drama from **Auto de los Reyes Magos** through Lope de Vega and major contemporaries.

***422. Calderón and His Contemporaries. (3)** MacCurdy
Continuation of 421; emphasis on Calderon, Francisco de Rojas, and Agustin Moreto.

***423. Cervantes: The Quijote. (3)** MacCurdy
Detailed analysis of the **Quijote** and treatment of its place in world literature.

***424. Cervantes: Other Works. (3)** MacCurdy
Works other than the **Quijote** with emphasis on **Novelas ejemplares** and the theatre.

***429. Special Topics in Spanish Literature. (3)** ‡
Topic will deal with individual authors, genres, or periods.

***514.** [417.] **Major Figures from 1898 to 1936. (3)** Fernandez
{Fall}

***518. Medieval Romance Lyric. (3)** Tomlins, White
(See M Lang 518.)

***519. Proseminar in Medieval Spanish Genres. (3)** Tomlins
Prerequisite: 442.

***520. Seminar in the Spanish Picaresque Novel. (3)** Guyler

***521. Seminar in Spanish Drama. (3)** ‡ Fernandez, MacCurdy

***522. Seminar in Spanish Poetry. (3)** Ulibarri

***523. Seminar in the Twentieth-Century Spanish Essay. (3)** Fernandez

***524. Seminar in the Spanish Novel. (3)** ‡ Fernandez

***529. Seminar in Spanish Literature. (3)** ‡

**B. SPANISH AMERICAN LITERATURE**

**300.** [290.] **Chicano Literature. (3)**
Survey of the thought and life-style of the Southwestern Spanish-speaking peoples through literature. Works from Spain and Spanish America influencing the Southwestern people to be studied through contemporary Chicano literary art forms. Does not count for the Spanish major or minor.

***334. Spanish American Literature in Translation. (3)** T. Holzapfel
Does not count for the Spanish major or minor.

***357-358. Survey of Spanish American Literature. (3, 3)** T. Holzapfel, Nason, Roberts
357—from discovery to 1880; 358—from 1880 to present.

**371. Topics in Spanish American Literature. (3)** ‡
For undergraduates only. Topic will deal with individual periods or genres.

***430. Spanish American Short Story. (3)** T. Holzapfel
Short story as a genre; its diverse forms in contemporary Spanish America.

***431. Modern Spanish American Poetry. (3)**
Careful study of Ruben Dario and contemporaries and main trends to 1960.

***432. Spanish American Vanguard Poetry. (3)**
Survey of poetry since Modernism.

***433. Criollismo in Spanish American Literature. (3)** Nason
Nativist literature, with special attention to prose fiction, from mid-nineteenth to midtwentieth centuries.

***434. Major Literature of the River Plate Region. (3)**
Literary works and movements of Argentina and Uruguay.

***435. Twentieth-Century Spanish American Novel until 1945. (3)** T. Holzapfel, Nason
Survey of major trends in early twentieth-century prose fiction.

***436. Twentieth-Century Spanish American Novel since 1945. (3)** T. Holzapfel
Survey of major trends in contemporary prose fiction; emphasis on "new novel".

**437. La Literatura y Pensamiento Chicanos. (3)**
Major characteristics of Chicano literature; critical analysis of works; oral traditions of Chicano literature; literary genres; the Chicano heritage.

***438. Mexican Literature. (3)**

***439. Special Topics in Spanish literature (3)‡**
Topic will deal with individual authors, genres, or periods.

***504. Seminar in Ibero-American Studies. (3)** T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Hist, Ib-Am, and Port 504.) {Fall, Spring}

***530. Seminar in Spanish American Drama. (3)** T. Holzapfel

***531. The Modernist Movement in Spanish American Poetry. (3)**

***532. Seminar in Twentieth-Century Spanish American Fiction. (3) ‡**

***533. Seminar in Spanish American Essay. (3)**

***539. Seminar in Spanish American Literature. (3) ‡**

**IV. CIVILIZATION AND FOLKLORE**

**304.** [297.] **Southwestern Hispanic Folklore. (3)**
Folkways of Spanish-speaking people of American Southwest: language, customs, beliefs, music, folk sayings. Taught in Spanish. Does not count for the Spanish major or minor.

***345. Spanish Civilization. (3)** Gonzalez, Ulibarri
{Fall}

***346. Ibero-American Civilization. (3)** Tolman, Gerdes
Development of European culture in Latin America and fusion with indigenous cultures. Taught in Spanish.

***361. Hispanic Folktales. (3)**
Transmission of folktale from Spain to New World; collection of local folktales by students. Taught in Spanish.

***362. Hispanic Folk Ballads and Songs. (3)**
Study of types of ballads sung throughout Hispanic Southwest. Taught in Spanish.

**V. GENERAL**

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

**498. Reading and Research for Honors. (3)**
Open to juniors and seniors approved by Honors Committee.
Prerequisite: permission of supervising instructor.

**499. Honors Essay. (3)**
Open only to seniors enrolled for departmental honors.
Prerequisite: permission of supervising instructor.

***551. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

***599. Masters Thesis. (1-6 hrs. per semester)**
See Graduate Programs Bulletin for total credit requirements.

***699. Dissertation. (3-12 hrs. per semester)**
See Graduate Programs Bulletin for total credit requirements.

## SWAHILI

No major or minor study offered.

**101-102. Introduction to Swahili. (3, 3)**

**201-202. Intermediate Swahili. (3, 3)**
Prerequisite: 102 or equivalent.

**203. Intermediate Swahili Conversation. (3)**
Prerequisite: 102. {Offered upon demand}

**497. Undergraduate Problems. (1, to a maximum of 6)**
Prerequisite: permission of instructor.

# MUSIC

Peter L. Ciurczak, Chairperson
Fine Arts Center 1105, 277-2126

**PROFESSORS:**

John M. Batcheller, Ph.D., University of South Carolina
Francis H. Bowen, B.M., University of Illinois
Peter L. Ciurczak, Ph.D., North Texas State University
Joanna DeKeyser, B.M., University of Southern California
Leonard Felberg, M.M., Yale University
Donald C. McRae, M.A., University of New Mexico (Dean, College Fine Arts.)
George Robert, student of Edward Steuermann and Anton Webern
Morton G. Schoenfeld, M.M., University of Wisconsin

**ASSOCIATE PROFESSORS:**

John M. Clark, M.A., Ball State University
Sean Daniel, M.M.E., Indiana University
Artemus L. Edwards, Dipl., Curtis Institute
Hector A. Garcia, B.A., Peyrellade Conservatory
Karl Hinterbichler, D.M.A., North Texas State University
William M. Seymour, Ed.D., Washington University
Harold W. Van Winkle, M.M.E., Eastern New Mexico University
Arthur S. Wilkinson, M.M., University of Arizona
Floyd T. Williams, M.M., University of Cincinnati
William F. Wood, D.M.A., Eastman School of Music

**ASSISTANT PROFESSORS:**

Rita M. Angel, M.M., University of Sourthern California
Thomas A. Dodson, D.M.A., University of Southern California
Susan B. Patrick, Ph.D., University of North Carolina
Darrel R. Randall, B.F.A., University of California (Los Angeles)
Wesley T. Selby, M.M., University of Colorado
Harold L. Weller, M.A., Ohio State University

**LECTURERS:**

Christopher L. Shultis, B.M., Michigan State University

**MAJOR STUDY**

For curricula leading to the Bachelor of Music, Bachelor of Arts in Fine Arts, and Bachelor of Music Education, consult Catalog Index, "Music, Department of, curriculum."

**MINOR STUDY**

1. For a minor in music: 20 hours, including a total of 4 hours in music theory and 4 hours in ear-training; 6 hours selected from 139-140 or 371-373; 4 hours in applied music; and 2 hours of electives in music.
2. For a minor in music education, see Catalog Index, "Music Education, curriculum."

**FEES**

Students are reminded that charges for classroom supplies and services in certain music courses must be paid to the UNM Cashier during the first three weeks of each semester. Refunds will be given according to the refund schedule in the Student Expenses section of this catalog, p. 17.

**Applied music fee of $32 per credit hour, in addition to regular tuition, will be charged to: 1) music students enrolling for applied music courses beyond their curriculum requirements, and 2) non-music major students taking applied music as an elective (a limit of one credit hour per semester). Applied music fees of $48 per credit hour will be charged to all non-degree students taking nine or more hours (a limit of two credits per semester).**

**COURSES FOR NON-MAJORS**

**139. Music Appreciation. (3)**
A nontechnical course designed to expand the student's ability to listen actively. Repertoire includes compositions from chamber music and symphonic literature. Listening lab required. Summer, {Fall}

**140. Music Appreciation. (3)**
A nontechnical course designed to expand the student's ability to listen actively. Repertoire includes compositions from symphonic, chamber music, and vocal literature and is entirely different from that presented in course 139. Listening lab required. {Summer, Spring}

**151. Artistic Traditions of the Southwest. (3)**
(Also offered as Art Hist 151.) Pre-Columbian, American Indian, Spanish colonial, territorial, and modern traditions in architecture, art, dance, music, and theatre. {Fall}

**172. Jazz History. (2)**
A study of the evolution of jazz in the United States from its beginnings to the present. {Fall, Spring}

**291.** [295, 296.]**Music in Recreation. (3)**
(Also offered as Rec 295.) Social foundations and practices of music in recreation. Emphasis on equipping the recreational leader with effective skills and materials to deal musically with children and adults in recreational situations. {Fall}

**371. General History of Music. (3)**
A survey of Western music history and musical styles in art music from about 800 A.D. to the present. Music reading ability not required. {Fall}

**373. Folk Music of North America. (3)**
A survey of important types of folk music in North America (Canada, Mexico, and the United States). Music reading ability not required. Spring

## APPLIED MUSIC

**GROUP INSTRUCTION.**
Class instruction in applied music is provided for students whose experience and background do not qualify them for private instruction. Course numbers are:
Piano 111-112, 211-212
Voice 109-110
Other instruments 155-001 through 155-010

**PRIVATE INSTRUCTION.**
Two series of course numbers are available here:
1. Courses carrying 1 or 2 hours credit: 119-120, 219-220, 319-320, and 419-420. If your major program is in theory and composition, liberal arts, or music education, follow this series of numbers beginning with your freshman year.
2. Courses carrying 2 or 4 hours credit. If your major program is in performance or pedagogy, enroll for 119-120 your first year and **then** follow this series of numbers for your major instrument: 201-202, 301-302, and 401-402.

Note: If you study a secondary instrument or instruments, use the series of numbers under paragraph 1 above.

**109. Group Voice I. (1)†**
Open to beginners in voice except voice majors. {Fall, Spring}

**110. Group Voice II. (1)†**
Prerequisite: 109. Students majoring in music education must continue to enroll in this course until a grade of C or better is obtained. {Fall, Spring}

**111. Group Piano I. (1)†**
Music majors and minors only, except keyboard majors.
Prerequisites: 103 and 104. {Fall, Spring}

**112. Group Piano II. (1)†**
Music majors and minors only, except keyboard majors.
Prerequisite: 111. {Fall, Spring}

**113. Mexican Guitar. (1)**
Group instruction. {Fall}

**114. Mexican Guitar. (1)**
Continuation of 113. {Spring}

**119-120. Applied Music. (1 or 2 hrs each semester)**
Freshman major, secondary or elective course. {Summer, Fall, Spring}

**155. Orchestral Instruments. (1)†**
Group instruction in orchestral instruments and guitar. Music education majors only. {Fall, Spring}

**201-202. Applied Music. (2 or 4 hours each semester)**
Major sophomore course. {Summer, Fall, Spring}

**211. Group Piano III. (1)†**
Music majors and minors only except keyboard majors.
Prerequisite: 112. {Fall, Spring}

**212. Group Piano IV. (1)†**
Music majors and minors only except keyboard majors. Students majoring in music education must continue to enroll in this course until a grade of C or better is obtained.
Prerequisite: 211. {Fall, Spring}

**219-220. Applied Music. (1 or 2 hrs. each semester)**
Sophomore secondary or elective course. {Summer, Fall, Spring}

**§301-302. Applied Music. (2 or 4 hrs. each semester)**
Major junior course. {Summer, Fall, Spring}

**§*319-320. Applied Music. (1 or 2 hrs. each semester)**
Junior secondary or elective course.
Prerequisite: 4 hrs. credit or equivalent in the instrument to be studied. **Maximum allowable graduate credit 4 hrs. or equivalent.** {Summer, Fall, Spring}

**§401-402. Applied Music. (2 or 4 hrs. each semester)**
Major senior course. {Summer, Fall, Spring}

**§*419-420. Applied Music. (1 or 2 hrs. each semester)**
Senior secondary or elective course.
Prerequisite: 4 hrs. credit or equivalent in the instrument to be studied. **Maximum allowable graduate credit 4 hrs. or equivalent.** {Summer, Fall, Spring}

***501-502. Applied Music. (2 or 4 hrs. each semester)**
Major graduate course. {Summer, Fall, Spring}

***519-520. Applied Music. (1 or 2 hrs. each semester)**
Graduate secondary or elective course. {Summer, Fall, Spring}

***569-570. Applied Music. (1 or 2 hrs. each semester)**
Graduate secondary or elective course. {Summer, Fall, Spring}

**CONDUCTING**

**§363. Conducting. (2)**
Basic theory and techniques of conducting.
Prerequisites: 206, 208, junior standing in the major field. {Fall}

**§364. Choral Conducting. (2)**
Choral conducting techniques, score reading, interpretation.
Prerequisite: 363 {Spring}

**§365. Instrumental Conducting. (2)**
Instrumental conducting techniques, score reading, interpretation.
Prerequisite: 363. {Spring}

***564. Advanced Choral Conducting. (2)**
Prerequisites: 363 and 453 or the equivalent. {Offered upon demand}

***565. Advanced Instrumental Conducting. (2)**
Prerequisites: 363 and 453 or the equivalent. {Offered upon demand}

**ENSEMBLE**

**#143. University Chorus. (1)†**
Mixed Chorus. Open to all University students. {Fall, Spring}

**200. Accompaniment for Dance. (2)**
(Also offered as Dance 200.) The role of the musician in dance accompaniment, especially the pianist. Study of various dance forms (ballet, ethnic, contemporary) and types of rhythmic, textural, and dynamic support suitable to each. Appropriate repertoire and improvisatory techniques included. {Fall}

**230. Opera Studio (1)†**
Basic training in music theater. Open by audition to singers, conductors, pianists, stage directors, and producers. {Fall, Spring}

**231. Chamber Music. (1)†**
Practice, performance, and study of chamber music. Includes various combinations of strings, brasses, woodwinds, percussion, guitars, and the Contemporary Chamber Ensemble. {Fall, Spring}

**232. Early Music Ensemble. (1)†**
An ensemble, vocal and instrumental, specializing in the performance of music of the Middle Ages, Renaissance, and early Baroque. {Fall, Spring}

**#233. Symphony Orchestra. (1)†**
Study and public performance of symphonic literature. Auditions required. {Fall, Spring}

**234. Jazz Band. (1)†**
Modern jazz ensemble of twenty or more that performs music representing various styles of big band jazz, rock, and pop. {Fall, Spring}

**235. Collegiate Singers. (1)†**
Vocal ensemble that performs choreographed selections from musical theatre, jazz, and popular repertoire. Auditions required. {Fall Spring}

**236. Jazz Improvisation. (1)†**
Courses in techniques of spontaneous performance of jazz in contemporary idioms. {Fall, Spring}

**#241. University Band. (1)†**
Study and performance of concert band literature. Marching band required of wind and percussion concentrates in music education. {Fall, Spring}.

**#243. Concert Choir. (1)†**
Auditions required. Open to all University students. {Fall, Spring}

**§°*395. Accompanying. (1)†**
Study and performance of accompaniments for other students. {Fall, Spring}

**§*430. Advanced Opera Studio. (1-2)†**
Advanced performance in music theater and opera, culminating in major performances. Open by audition to singers, conductors, pianists, stage directors, and producers.
Prerequisite: 230. {Fall, Spring}

**HISTORY AND LITERATURE**

**101. Concert Music. (0)†**
Students working toward the B.M., B.A. in F.A., or B.M.E. must attend 15 recitals in each of 6 semesters in order to gain these degrees. Transfer students with at least 60 hours of credit must attend 15 recitals in each of 2 semesters. Grading will be CR/NC. {Fall, Spring}

**261. History of Music I. (3)**
Forms, styles, schools, principal composers, and representative masterworks from antiquity through Baroque. Music majors only. {Fall}

**262. History of Music II. (3)**
Continuation of Music 261, from Baroque to the present. Music majors only.
Prerequisite: 261. {Spring}

**§*411. Contemporary Period. (2)**
Music of the twentieth century and study of representative works by principal composers.
Prerequisites: 261, 262. {Spring, alternate years}

**§*412. Baroque Period. (2)**
Music of Western Europe from 1600 to 1750 with emphasis on forms, styles, principal composers, and performance practices.
Prerequisites: 261, 262. {Spring, alternate years}

**§*449. Music Repertory. (2)†**
Comprehensive study of solo repertory for voice or individual instruments. Specific area is announced in the class schedule when the course is offered.
Prerequisites: 261, 262. {Fall, Spring}

**§*471. The Classical Period. (2)**
Music of Haydn, Mozart, and Beethoven, their immediate forerunners and contemporaries.
Prerequisites: 261, 262. {Fall, alternate years}

**§*472. The Romantic Period. (2)**
Music in the nineteenth century after Beethoven; leading composers and their works.
Prerequisites: 261, 262. {Spring alternate years}

**§*473. Opera. (2)**
Opera and its principal composers.
Prerequisites: 261, 262. {Summer}

**§*474. Concerto. (2)**
Its form and principal composers from Bach to the present.
Prerequisites: 261, 262. {Summer}

**§*475. Symphonic Literature. (2)**
Developments in orchestral music from Bach to the present.
Prerequisites: 261, 262. {Fall, alternate years}

**§*476. The Medieval Period. (2)**
Music from the early Christian era to mid-fifteenth century.
Prerequisites: 262, 262. {Fall, alternate years}

**§*477. The Renaissance Period. (2)**
Music of Western Europe from the middle of the fifteenth century to the close of the sixteenth century.
Prerequisites: 261, 262. {Fall, alternate years}

**§*478. History of Chamber Music. (2)**
Chamber music literature from the Baroque to the present.
Prerequisites: 261, 262. {Spring, alternate years}

**§*479. Choral Masterworks. (2)**
A survey of choral masterworks from the pre-Renaissance to the present.
Prerequisites: 261, 262. {Offered upon demand}

**§*493. United States Composers. (2)**
Music of the United States from the seventeenth century to the present.
Prerequisites: 261, 262. {Summer}

***531. Bibliography and Research. (3)**
{Summer, Fall}

***533. Seminar in Music. (3)†**
Subject matter determined by instructor and class. {Spring}

***537. Selected Topics in Music Literature. (3)**
{Offered upon demand}

**MUSIC THEORY**
All beginning students in music must register for courses 103 and 104. Theory and ear-training courses must be taken concurrently as follows: 103-104, 105-107, 106-108, 205-207, 206-208.

**103. Music Theory I. (2)**
Notation, scales, key signatures, and intervals. Credit not allowed toward a major in music or music education. 103 and 104 must be taken concurrently. {Summer, Fall, Spring}

**104. Ear-Training I. (2)**
Aural apprehension of materials learned in Music 103 through singing intervals, scales, and triads. Dictation of simple rhythmic and melodic patterns. Credit not allowed toward a major in music or music education.
103 and 104 must be taken concurrently. {Summer, Fall, Spring}

**105. Music Theory II. (2)**
Part writing and harmonic analysis: triads, inversions, dominants seventh chords, cadences. Introduction to nonharmonic tones.
Prerequisite: adequate score on music theory placement test or completion of Music 103 with a grade of A. {Fall, Spring}

**106. Music Theory III. (2)**
Inversions of dominant seventh chords, modulation, nonharmonic tones, supertonic seventh, and secondary dominants.
Prerequisite: 105 with grade of C or better. {Summer, Spring}

**107. Ear-Training II. (2)**
Perception through sound of the materials of 105, with special emphasis on melodic, rhythmic, and harmonic dictation and the singing of melodies and intervals.
Prerequisite: adequate score on ear-training placement test or completion of Music 104 with grade of B. {Fall, Spring}

**108. Ear-Training III. (2)**
Perception through sound of the materials of 106, with more advanced singing and dictation.
Prerequisite: 107 with grade of C or better. {Summer, Spring}

**205. Music Theory IV. (2)**
Chromatic alterations and analysis: chorale harmonization, remote modulation.
Prerequisite: 106 with grade of C or better. {Fall}

**206. Music Theory V. (2)**
Continuation of chromatic harmony and analysis. Introduction to twentieth-century techniques.
Prerequisite: 205 with grade of C or better. {Spring}

**207. Ear-Training IV. (2)**
More advanced singing and dictation, correlated with the materials of 205.
Prerequisite: 108 with grade of C or better. {Fall}

§ Open only to graduate students and to undergraduates enrolled in preprofessional curricula of the College of Fine Arts. Exception may be made with permission of the Chairperson of the Department. Graduate credit allowed only when asterisk appears.

# Maximum of 8 hours credit allowed toward degrees in the B.U.S., in the College of Fine Arts, or the College of Education, 4 hours in other colleges.

° Qualified sophomores may enroll with Piano faculty approval.

**208. Ear-Training V. (2)**
Continuation of advanced singing and dictation.
Prerequisite: 207 with grade of C or better. {Spring}

**305. Composition I. (2)**
Beginning compositional techniques introducing 20th century harmony.
Prerequisite: 206 and 208 with a grade of C or better. {Fall}

**306. Composition II. (2)**
Beginning compositional techniques introducing 20th century harmony. Continuation of 305.
Prerequisite: 305. {Spring}

**§309. Form and Analysis. (2)**
Structural materials of the common practice period up to *sonata-allegro*.
Prerequisites: 206, 208 with a grade of C or better, 261, 262. {Fall}

**310. Form and Analysis. (2)**
*Sonata-allegro; rondo-sonata; fugue. Continuation of 309.*
Prerequisite: 309. {Spring}

**§*405. Counterpoint. (2)**
Analysis and writing in the style of the sixteenth century.
*Prerequisites: 206, 208, with a grade of C or better. {Fall}*

**#406. Counterpoint. (2)**
Analysis and writing in the style of the eighteenth century.
Prerequisites: 206, 208 with grade of C or better. {Spring}

**§*409. Composition. (2)**
Techniques and procedures in the composition of music.
Prerequisites: 306 and 310. {Fall}

**§410. Composition. (2)**
Continuation of 409. Composition majors only.
Prerequisite: 409. {Spring}

**§453. Orchestration. (2)**
Scoring for orchestra, including properties and limitations of string, wind and percussion instruments, notation, principles of combination and balance, and characteristics of the various "schools" of orchestration.
Prerequisites: 206, 208 with a grade of C or better. {Fall}

***505. Advanced Composition. (2)†**
May be repeated to the limit of 4 hrs. credit. {Fall,Spring}

***535. History of Music Theory. (3)**
{Offered upon demand}

***540. Studies in Musical Analysis. (3)**
Material will vary with interests of the class and instructor. {Offered upon demand}

***560. Ensemble Performance. (1)**

***563. Band Arranging. (2)**
Scoring for band and large wind ensemble, including properties and limitations of wind and percussion instruments and principles of combination and balance.
Prerequisite: 310. {Spring}

**PEDAGOGY**

**§*388. Music Pedagogy. (2)**
For the music student who plans to teach privately—preparation for beginners at various age levels.
Prerequisite: junior standing. {Fall}

**§*389. Music Pedagogy. (2)**
Continuation of 388, treating problems in teaching intermediate and moderately advanced students.
Prerequisites: 388 and junior standing. {Spring}

**PROBLEMS**

**351-352.** [391-392.]**Undergraduate Problems. (1-3 hrs. each semester).†**
Prerequisite: junior standing. {Summer, Fall, Spring}.

***551-552. Problems. (1-3 hrs. each semester)**

***SPECIALIZED COURSES***

**129. Comprehensive Musicianship. (1-2)**
{Summer}

**209. Diction for Singers. (2)**
The International Phonetic Alphabet and its application. {Fall}

**§387. Vocal Coaching. (1)†**
One-half hour of private instruction per week. {Fall, Spring}

**§490. Interdepartmental Proseminar. (3)** Staff
(See FA 490.) {Fall}

**THESIS COURSES**

***§499. Senior Thesis. (3-6)***
Open to seniors approved by the departmental honors committee. {Summer, Fall, Spring}

***591. Graduate Recital. (2-4 hrs. per semester)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

**MUSIC EDUCATION**

**CURRICULUM**

For the degree plans Bachelor of Music Education, Instrumental Track; Bachelor of Music Education, Vocal Track; and the Minor in Music Education, see Catalog Index, "Music Education, curriculum."

**194. Introduction to Music Education. (1)**
Will assist the student in discovering personal strengths and weaknesses relative to a career as a professional music educator. {Fall}

**293. Cultural Awareness Through Music Skills. (2)**
The music of global ethnic groups with emphasis on the musical skills needed to assist the elementary teacher toward relevant enrichment in teaching the humanities. {Fall, Spring}

**294. Teaching Music in the Elementary Schools. (3)**
(Also offered as Spec Ed 294.) Designed for music education majors dealing with teaching music in grades K-6. Encompasses role of consultant, curriculum development, and materials of instruction.
Prerequisite: 194. {Fall}

**297. Music for Special Education. (3)**
(Also offered as Spec Ed 297.) The therapeutic and educational values of music in the development of children in special education. Methods and materials of instruction to assist teachers in their work with physically, mentally, and emotionally distrubed children. {Spring}

**298. Music for the Elementary Teacher. (3)**
Will prepare elementary classroom teachers to teach music education in a self-contained classroom in traditional and open situations. {Fall, Spring}

**313. Teaching Choral Music in the Secondary Schools.** [Organization and Function of Secondary School Music Ensembles.]**(2)**
Administration, organization, methods, and literature appropriate for junior and senior high school choral ensembles.
Prerequisites: 294 and 446. {Fall}

**315. *Teaching Instrumental Music in the Secondary Schools.*** [Instrumental and Choral Literature.]**(2)**
Administration, organization, methods, and literature appropriate for junior and senior high school band and orchestra ensembles.
Prerequisites: 294 and 446. {Fall}

**400. Student Teaching in the Elementary School.(3-6-9, maximum total allowed 15)**
See the Department of Music Handbook for prerequisites. {Fall}

***429. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions consult the Department of Music Graduate Student Handbook. {Summer}

***440. Laboratory Experiences in Music Education. (3)**
Music in the open classroom, in general music classes, in the humanities, and team teaching.
Prerequisite: junior standing. {Summer}

***443. Music for the Pre-school Child. (2)**
The teacher in private pre-school institutions, church schools, kindergartens; the role of the music consultant.
Prerequisite: junior standing. {Offered upon demand}

***445. Junior High-Middle School Music Education. (3)**
A curriculum in music for the adolescent.
*Prerequisite: junior standing. {Offered upon demand}*

***446. Secondary School Music. (3)**
Will familiarize student with role of music in secondary school. Covers materials for student and teacher, methods of teaching, classroom management, the curricula, testing, and scheduling, and how these areas can be brought together for a successful teaching experience.
Prerequisite: 294. {Spring}

***451. Foundations of Musical Behavior. (3)**
Acoustics, perception, learning, and affective response in musical behavior.
Prerequisites: junior standing. {Fall}

***459. Concepts of Teaching Music in the Elementary School. (3)**
Melodic and harmonic interpretation, creative writing, directed listening and movement.
Prerequisite: junior standing. {Offered upon demand}

**461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
See the Department of Music Handbook for prerequisites. {Fall}

**462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)**
See Department of Music Handbook for prerequisites. {Fall, Spring}

**463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)**

***493. Reading in the Content Area-Music. (3)**
(Also offered as El Ed 490.) Discovering the ways music education can be employed as a positive influence in teaching verbal reading. The similarities which exist in note and verbal reading are covered. The necessity of a workable means of integrating the teaching of reading with other content areas (e.g., music) will be given attention. *{Spring}*

***534. Seminar in Music Education. (3)**
{Fall}

***550. Philosophy of Music Education. (3)**
{Spring}

***551-552. Problems. (1-3, 1-3 hrs. each semester)**

***599. Thesis. (1-6 hrs. per semester)**
Consult the Department of Music Graduate Student Handbook for total credit requirements.

# NATIVE AMERICAN STUDIES

COORDINATOR: Ted Jojola, Acting Director
*1812 Las Lomas NE*

Courses in Native American Studies are offered through various academic departments. Instructors are Native American and other experts in the particular field.
Native American Studies also provides unique student services for Native American students. The Native American Studies Center, staffed by Native American professional people, provides counseling, a gathering place for Native American students, and assistance with financial matters related to Indian governmental scholarships and grants from the Bureau of Indian Affairs.

**CURRICULUM**

**Amer St 221. Southwest Indian Communities. (3)**

**Amer St 301. Interdepartmental Studies in the Culture of the United States. (3)‡**
The Indian and the Law.
Seminar: Indian Law.
The Indian in American Literature.

**Amer St 302. Interdepartmental Studies in the Culture of the United States. (3)†**
The Indian in a Multicultural Setting.

**Amer St 322. The Five Civilized Tribes. (3)**

***Anth 315. Current American Indian Problems. (3)***

**Econ 340. American Indian Economic Development.(3)**

**Econ 349. Topics in American Indian Economic Development (1)†**

**Engl 280. Readings in Literature. (3)**
Introduction to Native American Literature.
Native American Literature.

**Engl 400. Literary Movements. (3)**
Native American Literature: Traditional.
Native American Literature: Modern and Contemporary.

**Engl 488. Special Topics. (3)**

**Hist 320. Studies in History. (3)**
Indians of the Southwest.
New Mexico Land Tenure.
Modern American Indian History.
Pueblo Indian History.
The Indian in American History.

# NATURAL SCIENCE

No major or minor study offered.

**125. Natural Science. (3-4)**
Deals with man's distribution in space and time. Man's cultural ascent is discussed from the standpoint of revolutions in cosmology, geology, mechanics, and the atom and its social consequences.

**126. Biological/Behavioral Science. (3-4)**
Deals with man's peaks of scientific discovery in anthropology, the human revolution; biology, the discovery of the gene; psychology, the cognitive revolution and the population-resource problem.

# NAVAL SCIENCE

Captain Jimmy W. Davis, USN, M.S., Auger University
Major Robert A. Aikman, USMC, M.Ed., University of San Diego
Lieutenant Guiseppe Donadio, USN, B.A., University of Rochester
Lieutenant Catherine E. Hine, USN, B.A., Eastern New Mexico University

**CURRICULUM**

See Naval Science Department.

**010. Naval Professional Laboratory. (0)** Staff
Drills and information for NROTC students. (30 hours each semester) {Fall, Spring}

**100. Principles and Concepts of Naval Science. (1)** Aikman
Introduction to the naval service, customs, traditions, courtesies, and naval officers communities. {Fall}

**105. Naval Ships Systems I. (3)** Staff
Introduction to naval engineering systems concepts, and practices. Topics include ship design, compartmentation, ship stability, damage control, fire-fighting, and ship propulsion systems. {Spring}

**201. Naval Ships Systems II. (3)** Staff
Principles of naval weapons systems. Topics include sensors and detection systems, computational systems, tracking systems, weapon delivery systems, the fire control problem, and new developments in weapon systems integration. {Fall}

**303-304. Navigation and Naval Operations. (3, 3)** Donadio
Theory, principles, and procedures of ship navigation and employment. Included are spherical trigonometry, mathematical analysis, spherical triangulation, sights, sextants, and publications and report logs. Tactical formations and dispositions, relative motion, and maneuvering board and tactical plots are analyzed. Rules of the road, lights, signals, and navigational aids including inertial systems are studied. {Fall, Spring}

**331. Evolution of Warfare. (3)** Aikman
Evolution of the basic principles and techniques of warfare throughout history. Relationship of tactics and strategy and the impact of technological developments in selected conflicts. Emphasis is placed on an understanding of the theoretical principles underlying modern tactics and strategy. {Spring 1983 and alternate years}

**407. Principles of Naval Leadership and Management. (3)** Hine
Structure and principles of naval leadership and management in which underlying concepts are examined within the context of American military, social, and industrial organization and practice. Emphasis is given to management, leadership, and human goals functions. {Fall}

**431. Amphibious Warfare. (3)** Aikman
Concepts, techniques, and history of amphibious warfare. The role of the U.S. Marine Corps in the development and implementation of amphibious warfare is emphasized. {Spring 1982 and alternate years}

# NURSING

Carmen R. Westwick, Dean
Nursing/Pharmacy 166, 277-4221

**PROFESSORS:**

B. Louise Murray, Ed.D., Teachers' College, Columbia University
Carmen Westwick, Ph.D., University of Denver

**ASSOCIATE PROFESSORS:**

Zella A. Bray, M.S.N.E., Indiana University
Idolia M. Colllier, M.S.N. Loyola University
Judith T. Maurin, Associate Dean, Ph.D., University of Missouri
Estelle H. Rosenblum, Ph.D., University of New Mexico
Jacqueline Solomon, M.S., University of New Mexico
Joann R. Weiss, M.A., University of Illinois

**ASSISTANT PROFESSORS:**

Charlotte R. Abbink, Associate Dean, M.S.N., University of Colorado
Sara J. Anderson, M.S.N., Wayne State University
Phoebe J. Becktell, M.A., University of New Mexico
Gloria A. Birkholz, J.D., University of New Mexico
Carol A. Burton, M.S.N., Catholic University
Dorothy H. Clough, M.N., University of California, Los Angeles
Jeannette M. Cochran, M.S.N., Indiana University
Roberta M. Cunico, M.B.A., University of New Mexico
Patsy L. Duphorne, M.S.N., University of Washington
Chiyoko Furukawa, M.S.N., University of Colorado
Carolyn D. Granger, M.S.N., University of Washington
Catherine N. Harris, M.S.N., University of California, San Francisco
Sharon L. Lewis, M.S.N., University of Colorado
Carol L'Esperance, M.S.N., Case Western Reserve
Laura A. Martinez, M.A., University of New Mexico
Elsie S. Morosin, M.A., University of New Mexico
Maureen J. Nash, M.S.N., Indiana University
Barbara D. Rickert, M.S.N., University of Alabama
Sandra L. Schwanberg, M.S.N., University of Illinois
Donea L. Shane, M.S. University of New Mexico
Dianna M. Shomaker, M.S., University of Washington
Patricia E. Stephens, M.S.N., University of California, San Francisco
Evelyn J. Suessle, M.S.N., Loma Linda University
Julia M. Thornburg, M.S.N., University of Michigan
Edythe M. Tuchfarber, M.S.N., Marquette University

**INSTRUCTORS:**

Corina B. Casias, M.S.N., University of Texas, El Paso
Lola J. Dauenhauer, M.B.A., University of Arizona
Carol Furgal, M.S.N., University of Nebraska
Kathleen M. McCort, M.S.N., Case Western Reserve
Anne Robin Meize, M.S.N., University of Texas, Austin

**PROFESSOR EMERITUS:**

Virginia Crenshaw, Ed.D., Peabody College

**CURRICULUM**

**129. Workshop. (1-3)**
An opportunity for nurses to update their knowledge and skills in nursing process in maintenance of, preventive, therapeutic, and restorative health care.

**225. Introduction to Concepts in Nursing. (3)**
Introduces concepts relating to the health care delivery system, roles of health care team members, issues and trends in nursing, and the philosophy and conceptual framework of the College of Nursing.
Prerequisites: Engl 101, Sp Com 221, Chem 112, Biol 123. {Fall, Spring}

**239. Nursing Pathophysiology I. (2-3)**
(Also offered as Pharm 239). A beginning course in human pathophysiology for pharmacy and nursing students. Nursing students are required to take 3 credit hours.
Prerequisite: Chem 212. Pre- or corequisites: Biol 237, 247L, 239L. {Fall}

**240. Nursing Pathophysiology II. (2-3)**
(Also offered as Pharm 240.) Continuation of 239.
Prerequisite: 239. Pre- or corequisites: Biol 238 and 248L. Nursing students are required to take 3 credit hours. {Spring}

**297. Independent Study. (1-3)**
Prerequisite: permission of instructor. {Fall, Spring}

**302L. Clinical Instrumentation. (3)**
(Also offered as EECE 302.) A survey of electrical and electronic instrumentation used in clinical medicine. Topics covered include basic principles of electricity, physiological effects of electrical shock, ECG, EEG, intensive care instrumentation, surgery instrumentation, and diagnositc instrumentation. {Offered upon demand}

**305, 306, 307. Problems in Nursing: Selected Topics. (3, 3, 3)**
Focus on study of the theoretical bases of selected problems in nursing. {Fall, Spring}

**308, 309, 310. Problems in Nursing: Selected Topics. (2, 2, 2)**
Focus on study of the theoretical bases of selected problems in nursing.

**324L. Application of Concepts of Human Growth and Development to Health Care Delivery. (4)**
Presentation of theories of psychosocial and biological growth and development across the life span. Laboratory experiences in a variety of health care settings allow for assessment of the application of these concepts as well as actual application of specified concepts within the health care delivery system.
Prerequisites: Engl 101, Soc or Anth, Psych 102, Sp Com 221, Statistics. 2 hrs. lecture, 1 hr. seminar, 2 hrs. lab. {Fall, Spring}

**331L. Problem Solving for the Healthy and Coping Client. (5)**
Theoretical study of basic roles of professional nursing. Emphasis placed on problem-solving process including non-intrusive assessment skills as it relates to clients of all ages who are healthy or coping with mild dysfunction.
Prerequisites: 225, 239L, 240L, Biol 237, 238, 239L, 247L, 248L, H Ec 125, Pharm 276; pre- or corequisite: 324L; corequisites for full-time students: 332, 333, 334L; corequisite for part-time students: 333. 4 hrs. seminar, 2 hrs. lab. {Fall}

**332. Interaction with the Healthy and Coping Client. (2)**
Theoretical study of basic roles of professional nursing. Emphasis placed upon principles of stress/adaptation theories, techniques of communication, and teaching-learning principles. Relates to clients of all ages who are healthy or successfully coping with mild dysfunction.
Prerequisites: 225, 239L, 240L, Biol 237, 238, 239L, 247L, 248L, H Ec 125, Pharm 276; pre- or corequisite: 324L; corequisites for full-time students: 331L, 333, 334L; corequisite for part-time students: 331L. 2 hrs. seminar. {Fall}

**333. Health Care Delivery System for the Healthy and Coping Client. (2)**
Theoretical study of basic roles of professional nursing. Emphasis placed upon health/illness continuum, and aspects of the health care delivery system applied to clients of all ages who are healthy or successfully coping with mild dysfunction.
Prerequisites: 225, 239L, 240L, Biol 237, 238, 239L, 247L, 248L, H Ec 125, Pharm 276; pre- or corequisite: 324L, corequisites for full-time students: 331L, 332, 334L. corequisites for part-time students: 334 prerequisites for part-time students: 331L, 332. 2 hrs. seminar. {Fall}

**334L. Nursing Intervention for the Healthy and Coping Client. (4)**
Theoretical study, laboratory, and clinical application of basic roles of professional nursing. Emphasis placed upon non-intrusive assessment skills as a means to enhance nursing judgment. Clients include healthy and successfully coping individuals of all ages.
Prerequisites: 225, 239L, 240L, Biol 237, 238, 239L, 247L, 248L, H Ec 125, Pharm 276; pre- or corequisite: 324L; corequisites for full-time students: 331L, 332, 333; corequisite for part-time students: 333; prerequisites for part-time students: 331L, 332. 1 hr. seminar, 6 hrs. clinical lab. {Fall}

**335L. Health Care Delivery System and the Client in Moderate Disequilibrium. (3)**
Theoretical and laboratory application of nursing functions in restorative care. Emphasis upon different aspects of the health care delivery system providing services to clients coping with moderate disequilibrium.
Prerequisites: 331, 332L, 333, 334L; corequisites for full-time students: 336, 337; corequisites for part-time students: 336. 2 hrs. seminar, 2 hrs. lab. {Spring}

**336L. Interaction-Communication with the Client in Moderate Disequilibrium. (5)**
Theoretical, laboratory, and clinical application of nursing function in restorative care. Clinical experience in acute care facilities. Emphasis upon communication skills. Clients include children, adults, and families needing support to cope with acute illness. (Effective with Spring semester 1982, credit hours will change from 4 to 5)
Prerequisites: 331, 332L, 333L, 334L; corequisites for full-time students: 335L, 337L; corequisite for part-time students: 335L. 2 hrs. seminar, 2 hrs. sim. lab, 4 hrs. clinical lab. {Spring}

**337L. Nursing Process and the Client in Moderate Disequilibrium. (6)**
Theoretical, laboratory, and clinical application of nursing functions in restorative care. Clinical experience in acute care facilities. Work with individuals in moderate disequilibrium. Emphasis upon the application of the nursing process to differing situations. (Effective with Spring semester 1982, credit hours will change from 5 to 6)
Prerequisites for all students: 331, 332L, 333L, 334L; corequisites for full-time students: 335L, 336L; prerequisites for part-time students: 335L, 336L. 2 hrs seminar, 2 hrs. sim. lab., 6 hrs. clinical lab. {Spring}

**397. Independent Study. (1-3)**
Upper-division standing.
Prerequisite: permission of instructor. {Fall, Spring}

**405, 406, *407. Problems in Clinical Nursing: Electives. (3, 3, 3)**
Focus on study of the theoretical bases of selected problems in clinical nursing with application in a laboratory situation. {Offered upon demand}

**408, 409, *410. Problems in Clinical Nursing: Electives. (2, 2, 2)**
Focus on study of the theoretical bases of selected problems in clinical nursing with application in a laboratory situation. {Offered upon demand}

***429. Workshop. (1-6)**
{Offered upon demand}

**441L. Health Care Delivery System and the Client in Severe Disequilibrium. (5)**
Theoretical and clinical application of nursing roles in working with clients in severe dysfunction. Special emphasis is placed upon different aspects of the health care delivery system providing services to clients with complex problems. (Effective with Fall semester 1982, credit hours will change from 4 to 5)
Prerequisites: 335L, 336L, 337L; corequisites for full-time students: 442L, 443L; corequisite for part-time students: 442L. 2 hrs. seminar, 6 hrs. clinical lab. {Fall}

**442L. Interaction-Communication with the Client in Severe Disequilibrium. (5)**
Theoretical and clinical application of nursing functions for clients with severe problems. Emphasis is placed upon communication skills that enhance client coping with severe dysfunction. (Effective with Fall semester 1982, credit hours will change from 4 to 5)
Prerequisites: 335L, 336L, 337L; corequisites for full-time students: 441L, 443L; corequisite for part-time students: 441L. 2 hrs. seminar, 6 hrs. clinical lab. Fall

**443L. Nursing Process and the Client in Severe Disequilibrium. (4)**
Theoretical and clinical application of nursing functions with clients in severe dysfunction. Experience in acute care, extended care, and community agencies. Emphasis upon the application of the nursing process to clients with complex problems. (Effective with Fall semester 1982, credit hours will change from 3 to 4)
Prerequisites: 335L, 336L, 337L; corequisites for full-time students: 441L, 442L; prerequisites for part-time students: 441L, 442L. 2 hrs. seminar, 4 hrs. clinical lab. {Fall}

**444L. Advanced Nursing. (6)**
Theoretical and clinical application of previous knowledge. Principles of management, leadership, evaluation of services, professional accountability, and advanced nursing emphasized. Experiences include advanced nursing in community and inpatient settings with individuals and groups of all ages. (Effective with Spring semester 1982, credit hours will change from 6 to 8)
Prerequisites: 441L, 442L, 443L. 4 hrs. seminar and 24 hrs. clinical lab. per week. {Fall, Spring}

**445L. Elective Experience. (8)**
Theoretical and clinical study of nursing responsibilities with client groups needing preventative maintenance, or restorative care. Emphasis on integration of prior knowledge and skill, and acculturation to professional nursing practice. Student selects experience with faculty adviser. (Effective with Spring semester 1983, credit hours will change from 6 to 8)
Prerequisite: 444L. 4 hrs. seminar and 24 hrs. clinical lab per week. {Fall, Spring}

**497. Independent Study. (1-3)**
Prerequisites: upper-division standing and permission of instructor. {Fall, Spring}

**498. Honors Study. (3)**
First part of two courses in departmental honors.
Prerequisites: junior standing in the College of Nursing and a 3.2 or better grade-point average. {Fall, Spring}

**499. Honors Study. (3)**
Second part of departmental honors.
Prerequisite: 498. {Fall, Spring}

***501. Advanced Nursing Theory I.** [Advanced Nursing Theory and Practice I.](3)
{Fall}

***502. Advanced Nursing Theory II.** [Advanced Nursing Theory and Practice II.](3)
Prerequisite: 501. {Spring}

***503. Research in Nursing I. (3)**
Prerequisite: an acceptable course in basic inferential and descriptive statistics. {Fall}

***504. Research in Nursing II. (3)**
Prerequisite: 503. {Spring}

***505. Professional Seminar. (2)**
{Fall}

***506. Problems in Clinical Nursing: The Family as Client.** [Problems in Clinical Nursing: The Client with Behavioral Disorders.](3)
{Fall}

***507. Problems in Clinical Nursing: The Individual as Client. (3)**
{Spring}

***508. Advanced Clinical Practicum: Psychiatric-Mental Health Nursing. (5)**
Prerequisites: 506 and 507. {Fall}

***509. Principles of Curriculum Development in Nursing. (2)**
{Fall}

***510. Teaching in Nursing Programs. (3)**
{Spring}

***511. Measurement and Evaluation in Nursing Education. (3)**
Prerequisite: basic course in inferential and descriptive statistics. {Fall, Spring}

***512. Advanced Teaching Practicum in Nursing. (5)**
Prerequisites: 509 and 510. {Fall}

***514. Nursing Administration in Health Institutions/Agencies. (3)**
{Spring}

***515. Advanced Practicum: Administration in Nursing. (5)**
Prerequisite: 514. {Fall}

***516. Problems in Clinical Nursing: Family Systems and Health Care Needs. (3)**
{Fall}

***517. Problems in Clinical Nursing: Community and Environmental Systems. (3)**
Prerequisite: 516. {Spring}

***518. Advanced Clinical Practicum: Community Health Nursing. (5)**
Prerequisites: 516 and 517. {Fall}

***519. Problems in Clinical Nursing: The Child-bearing Client at Risk. (3)**
{Fall}

***520. Problems in Clinical Nursing: The Client with a Developmental Deviance. (3)**
Clinical experience with a preceptor required.
Prerequisite: 519. {Spring}

***521. Advanced Clinical Practicum: Maternal and Child Nursing. (5)**
Prerequisites: 519 and 520. {Fall}

***525. Advanced Nursing Theory and Practice III. (3)**
Prerequisites: 501 and 502. {Fall}

***591. Graduate Problems. (1-6)**
May be repeated on different topic. {Summer, Fall, Spring}

***593. Topics. (1-6)**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***599. Nursing Thesis I. (1-6)**

# PALEOECOLOGY

Roger Y. Anderson, Chairperson
Northrop Hall 308, 277-2308

**COMMITTEE IN CHARGE:**
**PROFESSORS**

Roger Y. Anderson, Ph.D., Stanford University, (Geology)
James S. Findley, Ph.D., University of Kansas, (Biology)
Loren D. Potter, Ph.D., University of Minnesota, (Biology)

Interdepartmental undergraduate and graduate minors in paleoecology are offered to majors in the Departments of Anthropology, Biology, Chemistry, and Geology.

**UNDERGRADUATE MINOR**

The minor requires 30-36 hours in courses listed in the "Paleoecology Pool," including Paleoe 209 or 439. No more than 18 hours may be taken in any one department and courses in the major field may not be used for the minor. The following courses have been approved (see appropriate departmental listings for course descriptions and prerequisites):

Anth 320, 366F
Biol 121L, 122L, 221, 222, 260L, 350L, 363L, 371L, 487L, 489L
Chem 121, 122, 132, 253L, 301, 302, 303L, 304L, 311, 312
Geol 101-102-103-225, 105L-106L, 311L, 312L, 313L, 314L, 333L, 441L, 501
Math 345-346, 441

**GRADUATE MINOR**

Requirements are listed in the Graduate Programs Bulletin.

**209. The Earth Environment. (3)** Anderson, Kues
(Also offered as Geol 209.) Studies of the atmosphere, the ocean, and the terrestrial environment as a total system including environments of the past. Interrelationships of physical, biological, and human processes and resources. {Summer, Fall, Spring}

***439. Paleoclimatology. (3)** Anderson, Yapp
History of the earth's climate. Examination of methods in climatic reconstruction and mechanisms of climatic change. Emphasis on Pleistocene and Holocene climatic records.
Prerequisite: Geol 105L. 3 lectures. {Fall 1981 and alternate years}

**451-452. Problems in Paleoecology. (2, 2)**

***540. Advanced Stratigraphy—Sedimentology. (3)** Anderson, Ingersoll
(Also offered as Geol 540.)
Prerequisite: permission of instructor. {Spring}

***551-552. Problems. (2-3, 2-3 hrs. semester)**

# PHARMACY

Carman A. Bliss, Dean
Nursing/Pharmacy 182, 277-3241 or 2461

**PROFESSORS:**

Carman A. Bliss, Ph.D., Purdue University
Buck A. Rhodes, Ph.D., The Johns Hopkins University
Kenneth H. Stahl, Assistant Dean, Ph.D., University of Maryland

**ASSOCIATE PROFESSORS:**

Jerry L. Born, Ph.D., University of Iowa
William M. Hadley, Ph.D., Purdue University
Joachim J. Hermann, Ph.D., University of Michigan

William H. Jeffery, Pharm. D., University of California at San Francisco
Timothy S. Johnston, Pharm. D., University of California at San Francisco
H. William Kelly, Pharm. D., University of Minnesota
G. Philip Lehrman, Assistant Dean, Ph.D., University of Connecticut
William G. Troutman, Pharm. D., University of California at San Francisco
Roland L. Watkins, Ph.D., University of Iowa

**ASSISTANT PROFESSORS:**

Scott W. Burchiel, Ph.D., University of California at San Francisco
Robert C. Eschbach, Pharm. D., University of Texas
Christopher M. Miller, M.S., University of Kansas
J. Michael Rutledge, Ph.D., University of Florida

**RESEARCH ASSISTANT PROFESSOR:**

Ken Breslow, M.S., University of Southern California

**PROFESSOR EMERITUS:**

George Baker, Ph.D., Purdue University

Explanation of footnotes not indicated will be found on p. 78

**CURRICULUM**
See pp. 71.

**239L. Pharmacy Pathophysiology I.** [Pharmacy Pathology I.]**(2)** College of Nursing and School of Medicine Staff
(Also offered as Nurs 239L.) A beginning course in human pathophysiology for pharmacy and nursing students. The course will be offered as an autotutorial program. Space restrictions limit admission to enrolled pharmacy students or by permission of instructor.
Pre- or corequisite: Biol 237L or 239L. 1 lecture, 2 hrs. lab. {Fall}

**240L. Pharmacy Pathophysiology II. (2)** College of Nursing and School of Medicine Staff
(Also offered as Nurs 240L.) Continuation of Pharm 239L.
Pre- or corequisite: Biol 237 or 238. 1 lecture, 3 hrs. lab. {Spring}

**276. Principles of Pharmacology. (3)** Sather
Actions of drugs on living tissues and the basis upon which drugs are classified for their therapeutic usefulness. Includes the subdivisions of pharmacology: pharmacodynamics, posology, toxicology, and pharmacy.
Prerequisite: Chem 212; pre- or corequisites: Biol 237-238 or 136-139L. (Open only to students in the College of Nursing and in the Dental Hygiene Program.) {Spring}

**291. Pharmacy Orientation. (1)** Lehrman
Analysis of the pharmacy profession, pharmaceutical practice and education, legal responsibilities of pharmacists, and an introduction to the use of the professional literature.
Prerequisite: enrollment in the College of Pharmacy. {Fall}

**292. Socio-Economics of Health Care Delivery. (3)** Watkins
Health care problems of modern society, needs and demands for health care and health care delivery systems, the solution of socio-economic problems in promoting, restoring, and maintaining high quality health, the health team approach in comprehensive health care planning, and the pharmacist's role in health care planning and delivery. {Fall}

**296. O.T.C. Drugs and Products. (2)** Johnston
Conferences on various O.T.C. classes of drugs. Students are required to prepare for and participate in the conferences.
Prerequisites: Pharm 291 or permission of the instructor. {Spring}

**302. Immunology for Pharmacy. (3)** Burchiel
The basics of molecular and cellular immunology with special emphasis on the effects of drugs on the immune system. Introduction to vaccines, toxins and anti-toxins, and chemotherapeutic agents.
Prerequisites: third year standing, Biol 239, or permission of instructor. {Spring}

**343. Pharmaceutical Calculations. (2)** Rutledge
Metrology and the arithmetic involved in compounding and prescription work. {Fall, Summer}

**345.** [443L.]**Pharmaceutics I.** [Physical Pharmacy.]**(4)** Hermann
The physicochemical principles and concepts that form the basis for the study of pharmaceutical delivery systems are presented. Topics considered include intermolecular forces, thermodynamics, states of matter, ionic equilibria, solubility, partition phenomena and chemical kinetics.
Prerequisites: Physics 152, Math 181, Chem 302, 304L, Pharmacy 343 or concurrent enrollment in Pharm 343. 3 lectures, 1 hr. recitation. {Fall}

**346L.** [341L.]**Pharmaceutics II.** [Operative Pharmacy I.]**(4)** Rutledge
A course designed to familiarize the student with the classification, fundamental principles and processes of pharmacy and pharmaceutical dosage forms. Classroom study is augmented by laboratory preparation.
Prerequisites: 343, 345. 3 lectures, 1 lab. {Spring}

**373. Pharmacology I. (3)** Hadley
Study of the general principles of pharmacology followed by study of antimicrobials and antineoplastics.
Prerequisites: 239L-240L, Biol 237-238. {Spring}

**394. Animal Health. (1)** Day
Introduction to animal husbandry and animal health problems. The interrelationship of pharmacy and veterinary medicine and the social and economic relationships between man and animals.
Prerequisite: third year standing. {Offered upon demand}

**411. Nuclear Pharmacy Instrumentation. (3)** Study, Wylie
Interactions of radiation with matter and the measurement of radiation in a nuclear pharmacy or nuclear medicine laboratory. 2 lectures, 1 demonstration lab. {Fall}

**412L. Nuclear Pharmacy/Nuclear Medicine.** [Radiopharmacy.] **(4)** Rhodes, Staff
Basic concepts essential to nuclear pharmacy practice. Topics include the anatomy and physiology of organ systems and diseases evaluated by nuclear medicine procedures, mechanisms of radiotracer localization, preparation, quality control, and use of radiotracer drugs. 3 lectures, 3 hrs. lab. {Fall}

**413L. Quality Control in Nuclear Medicine. (2)** Rhodes, Staff
General principles of quality control with direct applications to radiopharmacy and nuclear medicine is presented. Emphasis placed on methods for providing a communitywide quality control program in nuclear medicine.
Prerequisites: 412L, NMDT 341, permission of instructor. 1 lecture, 3 hrs. lab. {Spring}

**414. Advanced Radiopharmacy Practices. (3)** Rhodes, Breslow, Study, Adams
The course will be taught in the block methods. Specific block topics will include quality control in nuclear medicine, in-vitro nuclear medicine procedures (radioimmunoassay, blood volumes, Shillings tests, $CO^2$ breath tests, ect.), and radiopharmaceutical manufacturing. 3 lectures.
Prerequisite: Permission of instructor. {Spring}

**415. Basics of Nuclear Medicine Science. (3)** Rhodes, Cordova
This introductory course provides the scientific basis for nuclear medicine science and radiopharmacy. Topics include: laws of radioactive decay, counting statistics, fundamentals of tracer methodology, radiochemistry, radiation chemistry, nuclear chemistry, and radiation biology. 3 lectures. {Fall}

**416. In-Vitro Studies. (2)** Staff
Study of the basic principles of radioimmunoassay, competitive binding analysis and related clinical laboratory tests utilizing radionuclides; effects of drug therapy on the various parameters being measured is stressed.
Prerequisites: Chem 423, Biol 430, or permission of instructor. {Spring}

**417L. Radiopharmacy Rotation I. (1-4)** Levit
Active involvement in all aspects of radiopharmacy dispensing, on-the-job training, lectures, demonstrations and special assignments are involved. Self-disciplined, objective based, task oriented approach is employed. 1 lecture, 3-9 hrs. lab. {Fall}

**418L. Radiopharmacy Rotation II. (5)** Rhodes, Staff
Involvement in clinincal aspects of radiopharmacy including professional communications; patient interviews; clinical consultations and problem solving; scan analysis; specialized nuclear diagnostic procedures; clinical trail design and coordination.
Prerequisite: 417L. 3 lectures, 6 hrs. lab. {Spring}

**419. Radiopharmacy Operations. (1)** Levit
Focuses on unique principles and procedures used in the operation of commercial radiopharmacies. {Fall}

**420L. Radiopharmaceutical Manufacturing. (2)** Rhodes, Staff
The procedures and practices of radiopharmacy manufacturing is taught. Student required to independently set up and manufacture a radiopharmaceutical product.
Prerequisite: permission of instructor. 1 lecture, 3 hrs. lab. {Spring}

**421. Pharmacy Accounting and Financial Management. (3)** Watkins
Principles and practices involved in basic accounting, the keeping of records, financial analysis, and the interpretation of financial reports applicable to community pharmacy. {Fall}

**422. Pharmacy Law. (3)** Lehrman
Laws and regulations relating to the practice of pharmacy. Includes federal and state drug laws, business law pertinent to pharmacy practice, and review of current health-related legislation.
Prerequisite: fifth year standing or permission of instructor. {Spring}

**423. Principles of Pharmacy Administration and Organization Behavior. (3)** Staff
An integration of administrative and behavioral science principles applicable to the practice of pharmacy. (See Mgt 361.)
Prerequisite: fifth year standing or permission of instructor. {Fall, Spring}

**424. Pharmacy Retailing Management. (3)** Watkins
General management activities involved in the operation of a community pharmacy. Includes such elements of merchandising as buying, selling, advertising, promotion, and pricing. {Spring}

**425. Seminar in Pharmacy Administration. (1)** Lehrman
Reports and discussions on current literature and recent advances in the field. Student presentations on topics concerned with administrative, legal, and socio-economic aspects of pharmacy practice.
Prerequisite: fifth year standing or permission of instructor. {Fall}

**426. Pharmaceutical Marketing. (3)** Lehrman
The pharmaceutical market and marketing institutions with emphasis on the industrial sector. Includes principles of drug product development, pricing, promotion, distribution, control, and competition.
Prerequisite: fifth year standing or permission of instructor. {Spring}

**431. Clinical Therapeutics I. (4)** Eschbach, Jeffery, Johnston, Kelly, Troutman
Introduction to disease states; laboratory tests used in their diagnosis and treatment; clinical drug therapy, adverse reactions, drug interactions and interferences with laboratory procedures inherent in such therapy.
Prerequisite: 373; corequisite: 475. 3 lectures, 2 hrs. conference. {Fall}

**432. Clinical Therapeutics II. (4)** Eschbach, Jeffery, Johnston, Kelly, Troutman.
Continuation of 431.
Prerequisites: 475 and 431; corequisite: 476. 3 lectures, 2 hrs. conference. {Spring}

**433L. Clinical Pharmacy Rotations I. (1-15)‡** Eschbach, Jeffery, Johnston, Kelly, Troutman
A directed experience with the student functioning at a professional level as a member of a health care team in a varied environment.
Prerequisites: 432 and 476. Enrollment may be adjusted to balance the number of students in 433L and 434L. {Fall}

**434L. Clinical Pharmacy Rotations II. (1-15)‡** Eschbach, Jeffery, Johnston, Kelly, Troutman.
Continuation of 433L.
Prerequisites: 432 and 476. Enrollment may be adjusted to balance number of students in 433L and 434L. {Spring}

**435L. Community Pharmacy Rotations I. (5)‡** Lehrman
Consists of practical experience for students in a community pharmacy under the guidance of pharmacy practitioners emphasizing the clinical aspects, such as patient interviewing, use of patient profiles, and consultations with physicians.
Prerequisite: permission of instructor. {Fall}

**437. Clinical Pharmacy V Lecture. (3)** Eschbach, Jeffery, Johnston, Kelly, Troutman
A study of drug-induced diseases by an organ systems approach, utilizing current medical literature. Emphasis is placed on the detection and treatment of the most clinically significant adverse drug reactions, particularly drug allergy.
Prerequisites: 432 and 476. {Fall}

**441. [342L.]Pharmaceutics III. [Operative Pharmacy I.](3)** Rutledge
The course is designed to present to the student the basic principles of biopharmaceutics and includes aspects of absorption, distribution and elimination of drugs, and an introduction to clinical pharmacokinetics.
Prerequisite: 346. {Fall}

**442. [449L.]Pharmaceutics IV. [Pharmacokinetics.](3)** Hermann
Introduction to pharmacokinetic principles and their application to the evaluation of absorption, distribution and elimination profiles of drugs in man. The course is designed to emphasize the manner in which pharmacokinetic equations are used to develop safe and effective drug dosage regimens.
Prerequisite: 441. {Spring}

**445. Pharmaceutics V. (1)** Rutledge, Staff
A laboratory course designed to introduce and prepare the student for functions and practice of dispensing of medications in a community pharmacy.
Prerequisites: 441, 3 hrs. lab. {Spring}

**446. Advanced Physical Pharmacy. (3)** Hermann
In-depth physicochemical approach to the understanding of pharmaceutical delivery systems such as emulsions, suspensions, capsules, and tablets. Other topics include ionic equilibria of polybasic acids and their salts, diffusion and permeability characteristics of drugs, controlled release concepts, and principles of radiochemistry.
Prerequisite: 345. {Spring}

**449. Advanced Pharmacokinetics. [Pharmacokinetics.](3)** Hermann
The course is designed to emphasize both the derivation and use of pharmacokinetic equations. Suitable models for the interpretation of pharmacokinetics is discussed.
Prerequisite: 442. {Fall}

**450. Clinical Pharmaceutics. (3)** Rutledge
A continuation of Pharm 449 to include the application of pharmacokinetic principles for the evaluation of drug-dosage levels in man.
Prerequisite: 442. {Spring}

**451. Institutional Pharmacy Practice. (3)** Miller
Objectives, principles, and methods for the provision of comprehensive pharmaceutical services in meeting modern patient care goals in hospitals and nursing facilities.
Prerequisite: fifth year standing or permission of instructor. {Fall}

**452L. Institutional Pharmacy Management. (4)** Miller
Administrative and managerial processes and decision making in the organization, control and operation and evaluation of pharmacies or drug rooms in hospitals and nursing facilities.
Prerequisite: 451. 3 lectures, 2 hrs. lab. {Spring}

**454L. Projects in Hospital Pharmacy Practice. [Drug Use in Review.](2-3)** Miller
Administrative project out in the field in any area of hospital pharmacy practices.
Prerequisite: fifth year standing. 9 hrs. lab. {Spring}

**457L. Hospital Pharmacy Laboratory. (2-3)‡** Miller
Supervised practical experience or research pertaining to the management or provision of pharmaceutical services in institutions.
Prerequisite: permission of instructor. 3-9 hrs. lab. {Fall, Spring}

**459L. Sterile Preparations. (4)** Miller
Theory and application of principles involved in the formulation, preparation, packaging, sterilization of sterile pyrogen-free products. Sterile techniques and control procedures are stressed.
Prerequisites: grade of C or better in Pharm 443L, fifth year standing, and permission of instructor. 3 lectures, 4 hrs. lab. {Fall, Spring}

**461. Organic Pharmaceutical Chemistry I. (3)** Born
A study, from the chemical viewpoint, of organic substances used in pharmacy and medicine.
Prerequisite: Chem 324; corequisite: Pharm 475L. {Fall}

**462. Organic Pharmaceutical Chemistry II. (3)** Born
A continuation of 461.
Prerequisite: 461; corequisite: 476L. {Spring}

**463. Advanced Pharmaceutical Chemistry I. (3)** Born
A comprehensive study of organic medicinal agents, with emphasis on the synthesis, properties, and relationships between chemical constitution and physiological activity.
Prerequisites: 462, 476L. {Fall}

**464. Advanced Pharmaceutical Chemistry II. (3)** Born
A continuation of 463.
Prerequisite: 463. {Spring}

**465L. Organic Pharamceutical Chemistry Laboratory I. (3)** Born
The synthesis and analysis of representative organic compounds used as drugs.
Prerequisite: Chem 253. Pre- or corequisite: Pharm 461. 1 lecture, 6 hrs. lab. {Fall}

**466L. Organic Pharmaceutical Chemistry Laboratory II. (3)** Born
A continuation of 465L.
Prerequisite: Chem 253L. Pre- or corequisite: Pharm 462. 1 lecture, 6 hrs. lab. {Spring}

**467. Chemistry of Natural Products I. (3)** Stahl, Bliss
The study of drugs of biological origin with emphasis on active constituents, their biosynthesis, structure, properties, and medicinal application.
Prerequsites: 462, 476L. {Fall}

**468. Chemistry of Natural Products II. (3)** Stahl
A continuation of 467.
Prerequisites: 462, 476. {Spring}

**475. Pharmacology II. (4)** Burchiel
A continuation of 373. Coverage includes drugs affecting the autonomic and central nervous systems, and cardiovascular and endocrine system pharmacology. The actions of the more important drugs are demonstrated.
Prerequisites: 373, Chem 324 or permission of instructor. {Fall}

**476. Pharmacology III. (4)** Burchiel
A continuation of 475.
Prerequisite: 475 or permission of instructor. {Spring}

**477. Immunopharmacology. (2)** Burchiel
Continuation of Pharmacy 302 with detailed emphasis on immunoassay, receptors, regulation of inflammation and immunity by pharmacologic and other agents, natural products/mediators, and immunotherapy.
Prerequisites: fifth year standing, 302, 476, or permission of instructor. {Fall}

**479L. Pharmacology Laboratory. (3)** Staff
Advanced pharmacological experimentation utilizing both in vitro and in vivo techniques commonly employed in the evaluation of therapeutic agents.
Prerequisites: 475, 476. 9 hrs. lab. {Fall}

**482. Toxicology I. (3)** Hadley
Study of the toxicities produced by household, environmental, and industrial chemicals with emphasis on symptomology and treatment. Special emphasis will be directed toward industrial, economic, and therapeutic toxicity problems encountered by the hospital and community pharmacist. Drug interactions, toxic side effects, and idiosyncratic reactions will be considered.
Prerequisites: 475L and 476L or permission of instructor. {Spring}

**483L. Pharmaceutical Chemistry/Pharmacological Lab. [Biochemical Pharmacology Laboratory.](2)** Born, Hadley
The synthesis and testing for biochemical pharmacologic effects of compounds which may be useful as drugs.
Prerequisites: fifth year standing or permission of instructor. One 6 hr. lab./week. {Fall}

**484L. Analytical Toxicology. [Toxicology II.](3)** Born, Hadley
The study of analytical techniques and instruments used in toxicology research. 1 lecture, 6 hrs. lab. {Spring}

**485. Biochemical Pharmacology Lecture. (2)** Hadley
The study of the biochemical basis of drug action. Drug metabolism and mechanism of drug action will be emphasized. 2 lectures. {Fall}

**487. The Toxic Environment. (2)** Hadley
The effect of the environment on health will be considered. Factors such as air, water, soil, and noise pollution will be included.
Prerequisite: fifth year standing. {Fall}

**493L. Pharmacy Practice I. (2)** Levit
A directed experience on a preceptor/extern basis in approved community and hospital pharmacies. 1 lecture, 3 hrs. lab. {Fall}

**494L. Pharmacy Practice II. (2)** Levit
A continuation of 493L. 1 lecture, 3 hrs. lab. {Spring}

**497. Problems in Pharmacy. (1-5)‡‡**
Research and library problems in some phase of pharmacy.
Prerequisite: permission of instructor. {Fall}

**498 Problems in Pharmacy. (1-5)‡‡**
Research and library problems in some phase of pharmacy.
Prerequisite: permission of instructor. {Spring}

# PHILOSOPHY

Howard N. Tuttle, Chairperson
Humanities Building 517, 277-2405

**PROFESSORS:**

Charlene McDermott, Ph.D., University of Pennsylvania
Paul F. Schmidt, Ph.D., Yale University
Fred Sturm, Ph.D., Columbia University

**ASSOCIATE PROFESSORS:**

Matthieu Casalis, Ph.D., Paris University
Helena Eilstein, Ph.D., University of Warsaw
Russell Goodman, Ph.D., John Hopkins University
G. Fred Schueler, Ph.D., University of California, (Berkeley)
Howard D. Tuttle, Ph.D., Brandeis University

**ASSISTANT PROFESSORS:**

Andrew Burgess, Ph.D., Yale University
Donald Lee, Ph.D., University of California (San Diego)
Brian O'Neil, Ph.D., University of California (Berkeley)

Philosophical studies are one basic way to focus a liberal education. The philosophy major is designed to meet the needs of several different groups of students: (1) as a central background for a liberal education; (2) as a preprofessional major (for example, pre-law, pre-theological, or even pre-medical); (3) as an interdisciplinary program (for example, English-philosophy and other courses in the philosophy of some field); and (4) for graduate study in philosophy.

Explanation of footnotes not indicated will be found on p. 78.

**MAJOR STUDY**

30 hours, of which 18 hours will be distributed as follows: 201, 202, 257, 358, either 352 or 354, and either 441 or 442, leaving 12 hours of electives at the 300 level or above.

**MINOR STUDY**

18 hours, including 201 and 202, plus 3 additional hours at the 200 level. 9 hours are to be distributed at the 300 or above level.

**RELIGIOUS STUDIES MAJOR AND MINOR**

A major, dual major, and minor in Religious Studies are available through the Religious Studies Program. For information see the listing under "Religious Studies" in this Bulletin.

**DEPARTMENTAL HONORS**

Students seeking honors in philosophy should (1) establish a committee of studies during their junior year, (2) enroll in Phil 498-499 for at least a total of 6 hours credit, and (3) check with the departmental honors adviser for further information and requirements.

**PERIOD MINOR**

For requirements, see "Comparative Literature," p. 93.

**107. Living World Religions. (3)**
Introduction to major living world religions, such as Hinduism, Buddhism, Islam, Christianity, and Judaism.

**110. Introduction to Philosophical Problems. (3)**
Selected problems in values knowledge, and reality. Social, political, and religious philosophy.

**111-112. Humanities I - II. (3, 3)**
Comparative introduction to the development of human civilizations emphasizing philosophic thought, religious practice, and artistic expression.

**115. Introduction to Chicano Thought. (3)**
Contemporary Chicano culture: intellectual roots in the history of ideas and current philosophical issues.

**156. Introduction to Logic. (3)**
Emphasis is placed on development of ability to understand, analyze and critically use various forms of argument.

**201. Ancient European Philosophy. (3)**
A historical study, especially of Greek philosphy.

**202. Modern European Philosophy. (3)**
A historical study from the Renaissance through Kant.

**203. The Environmental Problem. (3)**
Also offered as Arch. 181, Econ., Pol. Sci. 203.) What are the environmental problems and how they are approached by various disciplines; how problems are defined, limits imposed on scope of problems, solutions and tradeoffs.

**230. Old Testament History. (3)**
Pentateuch and the historical books of the Old Testament.

**231. Old Testament Prophets.** [Old Testament.]**(3)**
Prophetic books and later Old Testament writings.

**232. New Testament (3)**
New Testament and early Christian history

**241. Philosophic Problems. (3)‡**
Topic to vary. An elementary treatment of some major philosophic issue.

**242. Great Thinkers. (3)‡**
Figure will vary. A study of the thought of some major world thinker.

**245.** [145.]**Philosophical Problems in Business and Engineering Ethics.** [Thought and Expression.]**(3)**
Examination of the social and ethical bases of business society. Ethical issues in, e.g., advertising, free enterprise, labor relations, production, growth and the environment.

**247. Studies in Religions. (3)‡**
Topic to vary. Elementary topics in the study of world religions.

**253. Introduction to Philosophy of Science. (3)**
The place of science in the culture. Science and society. Elements of theory of meaning and truth; elements of deductive and inductive logic in application to problems of scientific methodology.

**254. Scientific Method (3)**
Observation, experiment and hypothesis. Definition and law. Factors of theory choice. Prediction and explanation. Science and probability. Some philosophical problems of modern science.
Prerequisite: 156 or 253 or 257 or permission of the instructor.

**255. Philosophical Problems of Legal and Medical Ethics. (3)**
Ethical issues arising in the legal and medical professions such as patient's rights, death, abortion, right to health care, free speech, pornography.

**257. Introduction to Symbolic Logic. (3)**
Methods and techniques of modern logic.

**263. Eastern Religions. (3)**
A study of major Eastern traditions, such as Taoism, Hinduism and Buddhism.

**264. Western Religions. (3)**
A study of major Western traditions, such as Judaism, Christianity and Islam.

**301-302. Interdepartmental Studies in the Culture of the U.S. (1-3, 1-3)**
(See Am St 301-302.) May be taken for departmental credit only with the consent of the chairperson.

**303. Hellenistic Philosophy. (3)**
Stoicism to Neoplatonism.

**304. Medieval European Philosophy. (3)**
Major thinkers from Augustine through Ockham.

**305. Topics in Medieval Philosophy. (3)‡**

**332. North American Philosophy. (3)**
Early developments, idealism, pragmatism, naturalism, realism, and analysis.

**334. Indian Philosophy (3)**
Upanishads, Bhagavad-gita, Jainism, Buddhism, the six Hindu systems and recent developments.

***335. Topics in Indian Philosophy (3)‡**

***336-337. Chinese Philosophy I - II. (3, 3)**
336—The development of Chinese thought from pre-Confucian times through the T'ang dynasty. 337—Chinese thought from the Sung dynasty to the present.

**341. Philosophic Questions. (3)‡**
An investigation of some important philosophic debate.

**342. Selected Philosophers. (3)‡**
A treatment of the thought of a major philosopher.

***344. Nineteenth Century Philosophy. (3)**
From Kant through Hegel, Marx, Schopenhauer, Kierkegaard, Mill, Nietzsche.

***346. Twentieth-Century Philosophy. (3)†**
Twentieth-century philosophies.
Prerequisite: 110 or 202 or 256 or 356 or permission of instructor.

**347. Topics in Religious Studies. (3)‡**
Studies in major religious figures or movements. Topic varies.

***348. Comparative Philosophy. (3)**
A comparative study of the Buddhist, Chinese, European, Indian, and Islamic philosophical traditions with reference to ontology, epistemology, axiology, and socio-political thought.

***350. Philosophy of Science. (3)**
Selected ontological and methodological problems of empirical sciences.
Prerequisite: 156 or 253 or 254 or 257 or permission of the instructor.

***352. Theory of Knowledge. (3)**
Problems and theories of epistemology.
Prerequisite: 110 or 156 or 202 or 356 or permission of the instructor.

***354. Metaphysics. (3)**
Theories of reality.
Prerequisites: 156, 201 or 202 or permission of instructor.

***355. Cosmology. (3)**
Theories of origin and nature of universe.

***356-357. Symbolic Logic. (3, 3)**
Methods and techniques of modern logic.
Prerequisite for 356: 257 or consent of instructor; for 357: 356 or consent of instructor

***358. Ethical Theory. (3)**
Inquiry concerning goodness, rightness, obligation, justice, and freedom.
Prerequisite: one previous philosophy course.

***360. Christian Classics. (3)**
A study of major writings in the Christian tradition, written by such persons as Augustine, Aquinas, Pascal, and Kierkegaard.

***361. Modern Christian Thought. (3)**
Background of the intellectual issues facing Roman Catholic and Protestant traditions today.

***363. Environmental Ethics. (3)**
Close reading of contemporary writings by naturalists, lawyers, theologians, and philosophers on the philosophical aspects of environmental problems.

***365. Philosophy of Religion. (3)**
Philosophic analysis of some major concepts and problems in religion.

***367. Philosophy of Art and Aesthetics. (3)**
A phenomenological investigation of the world of the arts with emphasis on aesthetic appreciation, artistic creativity, and the structuring of works of art.
Prerequisite: minimal ability to work within a given artistic medium or permission from the instructor.

***369. Foundations of Environmental Science. (3)**
Historical and contemporary philosophical issues associated with biological and geological science.

***371. Classical Social and Political Philosophy. (3)**
From Plato to Hobbes.

***372. Modern Social and Political Philosophy. (3)**
From Hobbes to present.

**375. Philosophy of Life. (3)**
Questions concerning the meaning of existence, consciousness, freedom, death, hope, despair, joy, etc.

***377. Environment and Society. (3)**
Environmental implications of major historical and contemporary social/political philosophies.

***380. Philosophy of Law and Morals. (3)**
Nature and function of public law and its relation to moral belief.
Prerequisite: one previous philosophy course

***385. Philosophy of Mind. (3)**
A study of certain issues connected with the nature and status of minds.
Prerequisite: 201 or 202 or 356 or permission of instructor.

***389-390. Latin American Philosophy I - II. (3, 3)**
(Also offered as Hist, Soc 389-390.) 389—pre-Columbian thought through independence ideologies. 390—positivism through contemporary thought.

***415. Foundations of Mathematics. (3)**
(Also Offered as Math 415.) This course will consider the following questions and topics. What is a number? Do numbers exist? What is a set? Do sets exist? What is an axiom system? Does mathematical rigor exist? Formalists versus realists. Brouwer versus Hilbert. Godel's theorem, Banach-Tarski paradox.
Prerequisite: serious interest in philosophical and historical aspects of modern mathematics.

***429. Aesthetics Institute Workshop. (1)**
A one-week session in Taos, New Mexico, at the Lawrence Ranch and Harwood Foundation, featuring lectures in general aesthetics, discussions. Carries graduate credit when specifically approved by the Graduate Committee. **May be repeated to a maximum of 3 hours.** {Summer only}

***441. Philosophical Movements. (3)‡**
Topic varies.

***442. Individual Philosophers. (3)‡**
Figure varies.

***443. Problems in Space, Time, and Causality. (3)‡**
Ontological and epistemological problems related to the concepts of space, time and causality in modern physics.
Prerequisite: 156 or 253 or 254 or 257 or 350 or permission of the instructor.

***445. Philosophy of Language. (3)**
Philosophies of meaning with special attention to the relations between language and thought.
Prerequisite: 201 or 202 or 257 or 356 or permission of instructor.

***447. Seminar in Religious Studies. (3)‡**
Major religious figures or movements. Topic varies.

***453. Interdisciplinary Asian Studies. (3)**
(Also offered as Geog, Hist, Pol Sci 453.) Cross-cultural and interdisciplinary investigations of problems and methodologies current in Asian studies.

***455. Philosophy of the Natural Sciences. (3)**
Critical examination of methods and concepts of empirical sciences.
Prerequisite: 156 or 253 or 254 or 257 or 350 or permission of instructor.

***465. Philosophy of the Social Sciences. (3)**
(Also offered as Soc 465.) Examination of the structure, methods and presuppositions of social sciences.

***470. Philosophy of History. (3)**
(Also offered as Hist 470.) Nature, structure, and presuppositions of theories of history and historical methods.

***480. Philosophy and Literature. (3)**
(Also offered as Engl-Phil 480.)
Prerequisites: 6 hours of literature and 3 hours of philosophy from the courses specified as requirements for the program.

***485. Philosophical Foundations of Economic Theory. (3)**
(Also offered as Econ-Phil 485.)
Prerequisites: Econ 200, 201.

**497. Honors Seminar. (3)†**
For departmental honors in philosophy. {Offered upon demand}

**498. Reading and Research. (1-3)†**
{Offered upon demand}

**499. Senior Thesis. (3)†**
For departmental honors. {Offered upon demand}

***501. Interdepartmental Seminar in the Culture of the United States. (3)**
(See Am St 501.)

**4. Survey of Contemporary Schools of Sociological ory II. (3)**
so offered as Soc 514.) {Spring}

**6. Seminar in Asian Philosophers. (3)‡**

**1. Seminar in Philosophical Movements. (3)‡**

**2. Seminar in Individual Philosophers. (3)‡**

**3. Seminar on the Problems of Space, Time and Caus- y. (3)‡**
requisite: 156 or 253 or 254 or 257 or 350 or permission the instructor.

**1. M.A. Problems. (1-3 hrs. per semester)‡**

**9. Master's Thesis. (1-6 hrs. per semester)**
the Graduate Programs Bulletin for total credit uirements.

**1. Ph.D. Problems. (1-3)‡**

**4. Ph.D. Seminar in Metaphysics. (3)**

**5. Ph.D. Seminar in Epistemology. (3)**

**6. Ph.D. Seminar in Logical Theory. (3)**
requisites: 257 and 356 or equivalents.

**8. Ph.D. Seminar in Value Theory. (3)**

**9. Dissertation. (3-12 hrs. per semester)**
the Graduate Programs Bulletin for total credit require- nts.

# HILOSOPHY-ECONOMICS

Economics-Philosophy.

# HILOSOPHY-ENGLISH

English-Philosophy.

# HYSICAL EDUCATION

Education, Health, Physical Education, and Recreation.

# HYSICAL SCIENCE

major or minor study offered.

**1-262. Introduction to Physical Science. (3, 3)**
*requisite: permission of instructor.*

# HYSICS AND ASTRONOMY

Marcus Price, Chairperson
ysics & Astronomy 100, 277-2616

**OFESSORS:**
rjit S. Ahluwalia, Ph.D., University of Gujarat
ymour S. Alpert, Ph.D., University of California, Berkeley
arles L. Beckel, Ph.D., Johns Hopkins University
ward C. Bryant, Ph.D., University of Michigan
lston Chandler, Ph.D., University of California, Berkeley
/on D. Dieterle, Ph.D., University of California, Berkeley
nes D. Finley III, Ph.D., University of California, Berkeley
Allister H. Hull, Jr., Ph.D., Yale University
vid S. King, Ph.D., Indiana University
ristopher P. Leavitt, Ph.D., Massachusetts Institute of Technology
n W. Peterson, Ph.D., University of New Mexico
Marcus Price, Ph.D., Australian National University
rian O. Scully, Ph.D., Yale University
rek B. Swinson, Ph.D., University of Alberta
vid M. Wolfe, Ph.D., University of Pennsylvania

**SOCIATE PROFESSORS:**
nes G. Small, Ph.D., Massachusetts Institute of Technology
lliam C. Sweatt, Ph.D., University of Arizona
chael Zeilik, II, Ph.D., Harvard University

**SISTANT PROFESSORS:**
k O. Burns, Ph.D., Indiana University
vin E. Cahill, Ph.D., Harvard University
ng W. Chow, Ph.D., University of Arizona

**NJUNCT PROFESSOR:**
rald J. Stephenson, Ph.D., Massachusetts Institute of Technology

**SEARCH PROFESSOR:**
hn Linsley, Ph.D., University of Minnesota

**RESEARCH ASSOCIATE PROFESSOR:**
David Clark, Ph.D., University of Connecticut

Explanation of footnotes not indicated will be found on p. 78.

*Prerequisite to major and minor study in physics and in astrophysics are the basic courses Physcs 160, 161, 163L§, 262, 264L§, and Math 264, 311; astrophysics majors also take Astr 270, 271. Freshman students planning to major or minor in physics or astrophysics and having the necessary mathematics prerequisites usually take Physcs 160 and Math 162 in their first semester and Physcs 161 and Math 163 in their second semester. There is some flexibility in these prerequisites. Academic advisement prior to actual registration is required each semester for students with a major in physics or astrophysics.*

*Undergraduate students, especially those anticipating graduate study in physics or astronomy or interested in research training, are invited to apply to the Department for details of the Undergraduate Honors Program during the second semester of their junior year. Note: Physcs 496, 497, 498L, and 499L.*

**MAJOR STUDY IN PHYSICS**

Physics 301, 302, 303, 304, 305, 306, 307L, 308L, 491, 492; Math 312, 316, or 361, 362; Chem 121L-122L or 131L-132L.

**MINOR STUDY IN PHYSICS**

Four courses selected from Physcs 301, 302, 303, 304, 305, 306, 330; Math 316 or 361.

**MAJOR STUDY IN ASTROPHYSICS**

Physics 301, 302, 303, 304, 305, 330; Astr 401, 402, and 3 hours of astronomy courses numbered above 399; Math 312, 316 or 361, 362. Chem 121L-122L or 131L-132L.

**MINOR STUDY IN ASTROPHYSICS**

Physcs 302, 330 and two of 301, 303, 305; Astro 270, 271, 3 hours of astronomy courses numbered above 399; Math 316 or 361.

**GRADUATE STUDY**

Prerequisite for all courses numbered 500 and above: *an undergraduate major in physics* equivalent to that outlined above.

**GROUP REQUIREMENTS**

Courses in this department satisfy the requirements of Group 4 in the College of Arts and Sciences.

**GENERAL INTEREST COURSES IN PHYSICS AND ASTRONOMY**

**Astr 101. *Introduction to Astronomy.* (3)** Burns, King, Price, Zeilik
The theme of this course is cosmic evolution. It provides a guided tour of the universe to find out where and when we are in the cosmos. The presentation is descriptive and nonmathematical. It starts with an overview into people's ideas about the universe. After an inquiry into the origin and evolution of the solar system, a study of stars is made to find the place of the solar system in the Milky Way Galaxy. *Finally, a history is presented of the physical, chemical, and* biological evolution of the universe, from its beginning in a big bang to the possibility of life elsewhere in the Galaxy. Special topics may include black holes, interstellar communication, UFOs, and missions to the planets. No preparation is assumed. Important concepts of physics, chemistry, and biology are introduced in the context of the course. See Astr 111L for optional observations. {Summer, Fall, Spring}

**Astr 111L. Astronomy Laboratory. (1)** Burns, King, Price, Zeilik
Intended as an adjunct to Astr 101, this course deals with elementary techniques in astronomical observations. 2 hrs. at campus observatory.
Pre- or corequisite: Astr 101. {Fall, Spring}

**Physcs 100. Natural Science. (4)**
An introduction to the Natural Science disciplines. Emphasis on intensive skills improvement in reasoning, mathematics, communications, reading and comprehensive study techniques which are required for further study in any of the Natural Science disciplines. Individual courses will emphasize content pertinent to the department offering the course, but all courses will be interdisciplinary and focus on skills development. For students who score 17 or below in Natural Science on the ACT, or who are admitted with a Natural Science deficiency.

**Physcs 102. Introduction to Physics. (3)** Ahluwalia, Chandler, Price, Wolfe
This course is designed for non-science students in all colleges as well as for students planning to major in the sciences who want a general introduction to the basic phenomena and concepts of physics. The treatment is primarily descriptive, with practical demonstrations and applications and with a minimum of elementary mathematics. No previous preparation is assumed. Basic physical concepts such as energy, momentum, and electric charge are discussed as well as the properties of gravitational, electromagnetic and nuclear forces, and wave phenomena. The basic ideas of relativity and quantum theory are introduced. See Physcs 112L for an optional laboratory. {Fall, Spring}

**Physcs 103. Meteorology. (3)**
This course is designed for students who may have no technical background but who are interested in weather. *Demonstrations and films emphasize general principles underlying weather processes and illustrate special effects.* Topics include the interaction of the sun with the earth and its atmosphere, pressure systems and winds, weather data for the surface and aloft, stability and instability in the atmosphere, production of clouds and precipitation, development of frontal systems and of special storms, weather charts and maps and their use in forecasting. See Physcs 113L for an optional laboratory.

**Physcs 104, 105. Physics and Society. (3, 3)** Hull
These courses are intended for the student with minimum previous exposure to physical science. The concepts, ideas, and methodology of physics are developed as the basis for a discussion of their impact on society and the impact of society on the development of physics. In the first term, mechanics is introduced in the context of a discussion of the history of cosmology, of artificial satellites and space flight, and of missiles. Electricity and magnetism lead to a discussion of communication: telegraph, telephone, radio, TV. In the second term, thermal physics leads to a discussion of meteorology, climatology, pollution, weather modification, violent storms, aviation weather and soaring; energy concepts and special relativity lead to a discussion of mass energy, nuclear fission and fusion reactors, nuclear weapons, science policy and ethics, energy problems and alternative sources. Either course may be taken by itself, or both courses may be taken in either order. {104—Fall, 105—Spring}

**Physcs 106. Light and Color.** [Light.]**(3)** Bryant
This elementary course in optics and optical phenomena is intended primarily for students in the liberal arts, fine arts, and education. Light and color and optical systems are explained with demonstrations and graphical techniques, without formal mathematics. The formation of images with mirrors and lenses, wave phenomena, the eye, rainbows, tricks with polarized light, lasers and holography are covered. See Physcs 116L for an optional laboratory. {Fall, Spring}

**Physcs 108. Introduction to Musical Acoustics. (3)** Leavitt
This course is designed to provide a physical foundation of understanding the experience of music and the acoustics of the environment of music. It consists of the nonmathematical application of concepts of physics to sound perception, musical instruments, and to acoustics of the auditorium. Most of the topics covered are fully demonstrated in class. These include the nature of sound and its sources, functioning of the ear, harmonics and tone quality, auditorium response, pitch and musical scales, demonstration and analysis of the piano and other stringed instruments, woodwinds, brasses, the voice, discussion of electronic reproduction and synthesis of sound. See Physcs 118L for an optional laboratory. {Fall, Spring}

**Physcs 112L. Physics Laboratory. (1)** Chandler, Price
A physics laboratory offered in conjunction with Physcs 102 for students desiring laboratory credit. Experiments and projects designed to explain basic physical concepts related to the atom, the environment, and the universe.
Pre- or corequisite: Physcs 102. 2 hrs. lab. {Fall, Spring}

**Physcs 113L. Meteorology Laboratory. (1)**
Practical experience with meteorological observations, charts, and weather maps.
Pre- or corequisite: Physcs 103. 2 hrs. lab.

§ Not required for the minor study in astrophysics.

**Physcs 116L. Light and Color Laboratory.** [Light Laboratory.]**(1)** Bryant
A laboratory offered in conjunction with Physcs 106L for students desiring laboratory credit. Experiments and demonstrations with optical phenomena; lenses, mirrors, the eye, interference, diffraction, polarization, lasers.
Pre- or corequisite: Physcs 106. 2 hrs. lab. {Fall, Spring}

**Physcs 118L. Musical Acoustics Laboratory. (1)** Leavitt
Intended as an adjunct to Physcs 108, this course emphasizes electronics and electronic equipment pertaining to acoustics and to music.
Pre- or corequisite: Physcs 108. 2 hrs. lab. {Fall, Spring}

## PHYSICS

For Physcs 102 through 118L see the general interest courses described above.

**151. General Physics. (3)**
Mechanics, sound, heat. The sequence 151, 152, 153L, 154L is required of pre-medical, pre-dental, and pre-optometry students, also of NROTC students in A&S and of pharmacy students.
Prerequisite: one of the courses Math 121, 150, 180. {Summer, Fall, Spring}

**152. General Physics. (3)**
Electricity, magnetism, optics.
Prerequisite: 151. {Summer, Fall, Spring}

**153L. General Physics Laboratory. (1)**
Mechanics, sound, heat.
Pre- or corequisite: 151. 3 hrs. lab. {Fall, Spring}

**154L. General Physics Laboratory. (1)**
Electricity, magnetism, optics.
Pre- or corequisite: 152. 3 hrs. lab. {Fall, Spring}

**157. Problems in General Physics. (1)**
Problem solving and demonstrations related to 151.
Corequisite: 151. {Fall, Spring}

**158. Problems in General Physics. (1)**
Problem solving and demonstrations related to 152.
Corequisite: 152. {Fall, Spring}

**160. General Physics. (3)**
Mechanics, sound. The sequence 160, 161, 163L, 262, 264L is required of students planning to major in certain sciences and in engineering.
Pre- or corequisite: Math 162. {Summer, Fall, Spring}

**161. General Physics. (3)**
Heat, electricity, magnetism.
Prerequisite: 160; pre- or corequisite: Math 163. {Summer, Fall, Spring}

**163L. General Physics Laboratory. (1)**
Mechanics, sound, heat.
Pre- or corequisite: 161. 3 hrs. lab. {Fall, Spring}

**167. Problems in General Physics. (1)**
Problem solving and demonstrations related to 160.
Corequisite: 160. {Fall, Spring}

**168. Problems in General Physics. (1)**
Problem solving and demonstrations related to 161.
Corequisite: 161. {Fall, Spring}

**262. General Physics. (3)**
Optics, modern physics.
Prerequisite: 161; pre- or corequisite: Math 264. {Summer, Fall, Spring}

**264L. General Physics Laboratory. (1)**
Electricity, magnetism, optics.
Pre- or corequisite: 262. 3 hrs. lab. {Fall, Spring}

**265L. Individual Laboratory Work in General Physics. (1)**
Prerequisite: permission of instructor. 3 hrs. lab. {Offered upon demand}

**267. Problems in General Physics. (1)**
Problem solving and demonstrations related to 262.
Corequisite: 262. {Fall, Spring}

****301. Heat and Thermodynamics. (3)** Alpert, Bryant
Kinetic theory; specific heats; conduction, convection, radiation; change of state; classical thermodynamics. {Fall}

****302. Optics. (3)** Alpert, Bryant, Finley, Leavitt
Geometrical optics; wave theory of light; Fresnel and Fraunhofer diffraction; polarization; dispersion, absorption, and scattering. {Spring}

****303-304. Analytical Mechanics. (3, 3)** Alpert, Beckel, Bryant, Finley, Leavitt
Statics and dynamics of particles and rigid bodies; introduction to Lagrange's method.
Pre- or corequisites: Math 316 for 303; Math 312 for 304. {303—Fall, 304—Spring}

****305-306. Electricity and Magnetism. (3, 3)** Ahluwalia, Alpert, Beckel, Bryant, Dieterle
Electrostatic and electromagnetic field theory. Direct and alternating current circuit theory.
Pre- or corequisites: Math 316 for 305; Math 312 for 306. {305—Fall, 306—Spring}

****307L-308L. Junior Laboratory. (2, 2)** Alpert, Beckel, Bryant, Dieterle, Wolfe
Experimental methods of physics. 1 lecture, 3 hrs. lab. each semester. {307L—Fall, 308L—Spring}

****327. Solid Earth Geophysics. (3)** Huestis
(Also offered as Geol 427.) Structure, constitution, and deformation of earth as determined by gravity, magnetics, seismology, heat flow, and earth currents. Related aspects of plate tectonics.
Prerequisites: Geol 101, Math 264, Physcs 161. {Spring}

****330. Atomic and Nuclear Physics. (3)** Ahluwalia, Alpert, Bryant, Dieterle, Finley, Leavitt, Swinson
Special relativity, quantum effects, atomic structure, X-rays, nuclear structure and nuclear reactions, instruments of modern physics.
Prerequisite: 262 or equivalent. {Spring}

***400. Seminar. (1 hr. per semester)**
{Fall, Spring}

***430. Physics of Matter. (3)** Chandler, Leavitt
Structural, mechanical, thermal, electrical, and optical properties of various states of matter, including gases, weakly ionized gases, plasmas, and especially solids as observed experimentally and as deduced from fundamental laws and principles.
Prerequisite: 330 or equivalent. {Spring}

***433. Molecular Biophysics. (3)** Beckel
(Also offered as Biol 433.) Physico-chemical properties and dependence of biological function on these properties for amino acids, proteins, nucleotides, DNA, and RNA. {Offered upon demand}

***434. Radiological Physics. (3)**
Radiation dosimetry, applications to diagnostic and therapeutic radiology, the use of radioactive materials in biology and medicine. {Offered upon demand}

***435. Introduction to Plasma Physics. (3)** Ahluwalia, Woodall
(Also offered as N Engr and Astr 435.) Plasma parameters adiabatic invariants, orbit theory, plasma oscillations, hydromagnetic waves, plasma transport, stability, kinetic theory, nonlinear effects, applications. {Fall}

***437. Introduction to Solar Terrestrial Physics.** [Atmospheric Optics.]**(3)** Ahluwalia
The sun as a star, photosphere, chromosphere, corona, solar activity, solar wind, interplanetary medium, earth's magnetosphere, solar terrestrial effects, applications. {Offered upon demand}

***440. Atmospheric Physics. (3)**
Atmospheric gases; cloud physics; the high atmosphere; radiation, atmospheric motions, and turbulence; aerosols. {Offered upon demand}

***445. Introduction to Cosmic Radiation.** [Cosmic Radiation.]**(3)** Ahluwalia, Swinson
(Also offered as Astr 445.) Primary cosmic radiation, the production and detection of secondary cosmic radiation, meteorological effects, geomagnetic effects, time variations, extensive air showers, applications to high energy physics. {Offered upon demand}

***451-452. Problems. (1, 1)**

***453-454. Problems. (2, 2)**

***461-462. Research Methods. (1, 1)**

***463-464. Research Methods. (2, 2)**

***466. Methods of Theoretical Physics. (3)‡** Alpert, Beckel, Chandler, Chow, Finley, Scully
(Also offered as Math 466.) A selection of mathematical methods applied to physics. {Fall}

***476L-477L. Experimental Techniques of Optics. (2,** Alpert, Small
Diffraction, interference, optical detectors, lens aberr tions, lasers, spectra, scattering, optical testing. 1 lectur 3 hrs. lab. {476L—Fall, 477L—Spring}

***491-492. Contemporary Physics. (3, 3)** Ahluwalia, Bryar Dieterle, Finley, Leavitt, Swinson
Introduction to special relativity and quantum mechanic atomic and nuclear physics, cosmic rays. {491—Fa 492—Spring}

***493L-494L. Contemporary Physics Laboratory. (3,** Dieterle
Spectrographic methods; lasers; atomic structure; natu and artificial radioactivity; cosmic rays. 1 lecture, 5 hr lab. {493L—Fall, 494L—Spring}

***495. Theory of Special Relativity. (3)** Ahluwalia, Finley
Relativistic kinematics and dynamics, relativistic electror agnetism, application to nuclear physics and astrophysic {Offered upon demand}

**496-497. Contemporary Physics Honors. (3, 3)** Ahluwali Bryant, Dieterle, Finley, Leavitt, Swinson
{496—Fall, 497—Spring}

**498L-499L. Contemporary Physics Honors Laboratory. ( 3)** Dieterle
1 lecture, 5 hrs. lab. {498L—Fall, 499L—Spring}

***500-501. Advanced Seminar. (1-3, 1-3)**
{Fall, Spring}

***503. Classical Mechanics I. (3)** Beckel, Bryant, Chandl Finley
{Fall 1982 and alternate years}

***504. Classical Mechanics II. (3)** Chandler, Finley
{Spring 1983 and alternate years}

***505. Statistical Mechanics and Thermodynamics. (** Chandler, Leavitt
{Spring 1983 and alternate years}

***511. Electrodynamics I. (3)** Alpert, Chandler, Finley
{Fall 1981 and alternate years}

***512. Electrodynamics II. (3)** Chandler, Finley
{Spring 1982 and alternate years}

***521. Quantum Mechanics I. (3)** Alpert, Beckel, Chandl Finley, Leavitt
{Spring}

***522. Quantum Mechanics II. (3)** Beckel, Finley, Leavitt
{Fall}

***523. Quantum Field Theory I.** [Quantum Mechani III.]**(3)** Finley
Prerequisites: 521 and 522. {Offered upon demand}

***524. Quantum Field Theory II.** [Quantum Mechani IV.]**(3)**
{Offered upon demand}

***530. Selected Topics in Solid State Physics. (3)‡**
Prerequisite: 521. {Offered upon demand}

***531. Atomic Structure. (3)** Beckel
Prerequisite: 521. {Offered upon demand}

***532. Molecular Structure. (3)** Beckel
Prerequisite: 521. {Offered upon demand}

***534. Selected Topics in Biophysics. (3)‡**
{Offered upon demand}

***535.** [480.]**Stability of Fluid Plasmas.** [Advanced Cc cepts in Plasma Physics.]**(3)** Ahluwalia, Woodall
(Also offered as Nuc Eng 535.)
Prerequisite: 435 or equivalent. {Spring}

***537. Selected Topics in Astrophysics and Space Physi** [Selected Topics in Space Physics.]**(3)‡** Ahluwalia, Leavit (Also offered as Astr 537.) {Offered upon demand}

***538. Advanced Methods of Theoretical Physics. (3)‡** E ckel, Finley
{Offered upon demand}

***540. Introduction to Nuclear Physics. (3)** Dieterle, Leav Stephenson
{Offered upon demand}

***542. Selected Topics in Theoretical Nuclear Physics. (3** Chandler, Finley, Stephenson
Prerequisites: 521, 540. {Offered upon demand}

***543. Selected Topics in High-Energy Physics. (3)‡** Chandler, Dieterle, Finley, Leavitt
Prerequisite: 521. {Offered upon demand}

***551-552. Problems. (1-4, 1-4 hrs. each semester)**

***554. Advanced Optics I. (3)** Sweatt
{Fall}

***555. Advanced Optics II. (3)** Sweatt
Prerequisite: 554. {Spring}

***556. Electro-Optical Physics. (3)**
Prerequisite: 554. {Fall}

***564. Laser Physics I. (3)** Chow, Scully
{Fall}

***565. Laser Physics II. (3)** Chow, Scully
Prerequisite: 564. {Spring}

***566. Nonlinear Optics and High Power Lasers. (3)**
Prerequisite: 564. {Fall}

***570. Theory of Relativity. (3)** Finley
Prerequisite: 503. {Offered upon demand}

***580. Advanced Plasma Physics.** [Plasma Science and Technology] **(3)**
(Also offered as NE 580.)
Prerequisite: 435, 535. {Fall}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

***650. Research. (1-12)**

***699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

## ASTRONOMY

**101. Introduction to Astronomy. (3)** Burns, King, Price, Zeilik
See description under General Interest Courses above. {Summer, Fall, Spring}

**111L. Astronomy Laboratory. (1)** Burns, King, Price, Zeilik
Intended as an adjunct to 101, this course deals with elementary techniques in astronomical observations, 2 hrs. at campus observatory.
Pre- or corequisite: 101. {Fall, Spring}

**270-271. General Astronomy. (3, 3)**
The solar system, stellar astronomy, the galaxy, extra-galactic systems, cosmology.
Pre- or corequisite: Math 150 or 162. {270—Fall, 271—Spring}

**272L-273L. General Astronomy Laboratory I and II. (1, 1)**
Observations of the moon, planets, and stars.
Pre- or corequisites: 270-271. 3 hrs. lab. {272L—Fall, 273L—Spring}

***401.** [370.]**Planetary Systems.** [The Solar System.]**(3)** King, Peterson, Zeilik
Comparative Planetology, planetary interiors and atmospheres, the sun and the interplanetary medium, comets, asteroids, satellites, origin and evolution of the solar system, starbirth and extrasolar planetary systems.
Prerequisites: Physics 330. {Fall}

***402.** [371.]**Stars and Galaxies. (3)** King, Peterson, Zeilik
Stellar spectra, Hertzsprung-Russel diagram, stellar interiors and atmospheres, stellar evolution and death, structure and contents of the Milky Way Galaxy, distances to galaxies, properities of galaxies, active galaxies, quasars, clusters {Spring}

***424. Selected Topics in Extragalactic Astronomy and Cosmology. (3)‡**
Distribution, properties, and interactions of galaxies. Active galaxies and quasistellar objects. Clusters of galaxies. Observational cosmology. {Spring 1982 and alternate years}

***425. Selected Topics in Galactic Astronomy.** [Galactic Nebulae and Interstellar Matter.]**(3)‡** King, Peterson, Zeilik
Galactic astronomy, including physical properties and processes in stars, the interstellar medium, and aggregates of stars. Structure of our galaxy. {Fall 1981 and alternate years}

**#*426. Selected Topics in Astronomical Methods. (3)‡**
Instrumentation and techniques in visual and infrared photometry and spectroscopy, radio astronomy (including aperture systhesis), high energy astronomy, and digital data acquisition and processing. {Offered upon demand}

***427.** [436.]**Selected Topics in Planetary Astronomy.** [Atmospheric Optics.]**(3)‡** Peterson
Planetary physics; planetary investigation using space vehicles; optical properties of planetary atmospheres. {Offered upon demand}

***435. Introduction to Plasma Physics. (3)** Ahluwalia, Woodall
(Also offered as N Engr, Physcs 435.) Plasma parameters, adiabatic invariants, orbit theory, plasma oscillations, hydromagnetic waves, plasma transport, stability, kinetic theory, nonlinear effects, applications. {Fall}

***437. Introduction to Solar Terrestrial Physics.** [Introduction to Space Physics.]**(3)** Ahluwalia
The sun as a star, photosphere, chromosphere, corona, solar activity, solar wind, interplanetary medium; earth's magnetosphere, solar terrestrial effects, applications. {Offered upon demand}

***445. Introduction to Cosmic Radiation.** [Cosmic Radiation.]**(3)** Ahluwalia, Swinson
Primary cosmic radiation, the production and detection of secondary cosmic radiation, meteorological effects, geomagnetic effects, time variations, extensive air showers, applications to high energy physics. {Offered upon demand}

***455-456. Problems. (1, 1)**

***457-458. Problems. (2, 2)**

***537. Selected Topics in Astrophysics and Space Physics. (3)‡** Ahluwalia, Leavitt
(Also offered as Physcs 537.) {Offered upon demand}

## POLITICAL SCIENCE

Robert J. Sickels, Chairperson
Ortega Hall 305, 277-5104 or 2716

**PROFESSORS:**

F. Chris Garcia, Ph.D., University of California, Davis
Fred R. Harris, J.D., University of Oklahoma
Martin C. Needler, Ph.D., Harvard University
Robert J. Sickels, Ph.D., Johns Hopkins University
Jay B. Sorenson, Ph.D., Columbia University
Harry P. Stumpf, Ph.D., Northwestern University

**ASSOCIATE PROFESSORS:**

Paul L. Hain, Ph.D., Michigan State University
Peter A. Lupsha, Ph.D., Stanford University
James L. Ray, Ph.D., University of Michigan
Karen L. Remmer, Ph.D., University of Chicago
Harold V. Rhodes, Ph.D., University of Arizona

**ASSISTANT PROFESSORS:**

Timothy J. DeYoung, Ph.D., Claremont Graduate School
Martha H. Good, Ph.D., Brown University
Philip G. Roeder, Ph.D., Harvard University
Debra C. Rosenthal, Ph.D., State University of New York-Binghamton

**PROFESSORS EMERITI:**

Dorothy I. Cline, M.A., University of Chicago
Edwin C. Hoyt, Ph.D., Columbia University

### MAJOR STUDY

A total of 33 hours is required for a major in political science. These hours must be distributed among the following requirements (a through c): a) 12 hours from the core courses (200, 220 or 221 **not both**, 240, 260, and 280), including at least one course from each of the following three groups: (200 or 270), (220, 221, or 240), and (260 or 280); b) 15 hours from courses numbered 300 or above; c) 6 additional hours from any level.

### MINOR STUDY

A total of 21 hours, including at least three of the core courses, is required for a minor in political science.

### DISTRIBUTED MINOR FOR POLITICAL SCIENCE MAJORS

With the consent of the department chairperson, a major may offer an American studies minor as well as a minor in a single department. For requirements, see "American Studies".

A political science major may pursue a distributed minor consisting of courses in related disciplines, provided the minor program of courses is approved by the department chairperson.

### CONCENTRATIONS:

A political science major may take a "concentration" (a major integrated with a distributed minor) in International Relations, Law and Politics, or Public Policy. See the department chairperson for the required curricula.

### DEPARTMENTAL HONORS

Superior sophomore and junior students are invited to apply for admission to the Undergraduate Honors Program, beginning in the junior year. Students participating in this program are eligible to graduate with departmental honors if recommended by the faculty on the basis of outstanding performance. Those enrolled in the honors program are expected to take 495, 496, and 497.

### INTRODUCTORY AND GENERAL COURSES

**100. Social Science. (4)**
An introduction to the social science disciplines. Emphasis on intensive skills improvement in communications, reading comprehension. Study techniques and logical reasoning which are required for further study in any of the social science disciplines. Course themes may vary by department, but all courses will be interdisciplinary and will emphasize skills. For students who score 13 or below in social science on the ACT or who are admitted with a social science deficiency.

**110. The Political World. (3)**
An introduction to politics, with emphasis on the ways people can understand their own political systems and those of others. (Students who have already had courses in political science may not count 110 toward a major.) {Fall, Spring}

***300. Political Topics. (3)‡**
Specific topics of political science which relate contemporary issues to the discipline. Precise topics will be noted in appropriate class schedules prepared for registration. May be repeated for credit. {Fall, Spring}

**491. Internship. (1-6)**
This course provides supervised work experience in the practical application of political science skills.
Prerequisites: permission of instructor and department chairperson.

**495. Junior Honors Seminar. (3)**
Prerequisite: permission of instructor.

**496.** [420.]**Undergraduate Seminar. (3)‡**
One section of this course is offered in conjunction with each graduate pro-seminar (510, 520, 525, 530 and 540). Open to undergraduate majors with 3.3 GPA and others with permission of instructor.

**497. Senior Thesis. (3)**
Prerequisite: permission of instructor.

**499. Independent Study. (1-3)**
Open to senior majors with 3.3 GPA and permission of department.

### CORE COURSES

**200. American Politics. (3)**
Survey of American politics, including political behavior of the American electorate, the theory of democracy, the structure and function of American political institutions, and contemporary issues. {Fall, Spring}

**220. Comparative Politics. (3)** Remmer, Good
Designed to give students the ability to understand and evaluate political regimes by focusing on the political history, socio-economic structure, and contemporary political institutions and behavior. Includes consideration of European, communist, and developing systems. {Fall, Spring}

**221. European Politics. (3)** Good
Political systems of Western European countries. {Fall, Spring}

**240. International Politics. (3)** Ray, Roeder, Sorenson
Analyzes significant factors in world politics, including nationalism, "national interest," ideology, international conflict and collaboration, balance of power, deterrence, international law, and international organization. {Fall, Spring}

# May be repeated up to 9 hours.

**260. Political Ideas. (3)** Rhodes
Introduces many of the enduring political issues in descriptive, analytical, and normative terms. Will include discussion of both classical and contemporary political ideas and ideologies. {Fall, Spring}

**270. Public Policy and Administration. (3)** DeYoung, Rosenthal
Introduces public policy and bureaucracy, including decision-making and implementation.

**280. Introduction to Political Analysis. (3)** Ray, DeYoung
Discovery of causal patterns in political behavior, evaluation of the effectiveness of political reforms and campaign techniques, analysis of the logic of scientific research, and related topics. No knowledge of statistics, computers, or research methods assumed. {Fall, Spring}

**SCOPE AND METHODS**

***480. Statistics for Social Research.** [Intermediate Statistics for Social Research.]**(3)** DeYoung
Foundations of statistical inference with emphasis on social science applications. Includes (a) choice of correct statistical model for the problem, (b) computation, (c) interpretation.
Prerequisite: 280 or equivalent or permission of instructor. {Spring}

***481. Introduction to Empirical Research. (3)** DeYoung
Introductory course in research methodology. Does not assume knowledge of mathematics or statistics. Covers the role of empirical analysis in political science, the logical foundations of empirical analysis, elementary research techniques, and research design.
Prerequisite: 280 or equivalent or permission of instructor. {Fall}

***482. Survey of Political Science as a Discipline and a Profession. (1)**
Topics include scope and component fields of political science, relationships with other social sciences, problems of explanation and prediction, including theories, models, and approaches. (Required of all graduate students in political science and recommended for undergraduate majors.)

**AMERICAN POLITICS**

**301.** [290.]**The Government of New Mexico. (3)** Lupsha, Hain
Prerequisite: 200.

***302. Comparative State Politics. (3)**
Analysis of the similarities and variations of American state politics with emphasis on policy outputs.
Prerequisite: 200. {Spring}

***303. U.S. Politics and Education. (3)** Garcia
(Also offered as Ed Fdn 401.) A basic course for the education student and educator on politics and government emphasizing the relationships between these and education. Focuses upon the politics of education, political education in the schools, and the effects of education on political systems. (Generally not for political science majors, minors, and those having taken 200; these students require permission from the instructor.)

***304.** [382.]**Group Politics. (3)** Hain
Theories and research on the roles played by interest groups (economic, social, and ethnic) on different arenas of government (electoral, legislative, judicial, and executive), principally in the United States.
Prerequisite: 200. {Spring}

***305. Public Opinion and Electoral Behavior. (3)** Garcia
Public opinion, its content and measurement, and its relation to public policy and electoral behavior.
Prerequisite: 280 or permission of instructor.

***306. Political Parties. (3)** Hain, Harris
The American party system, national, state, and local. {Fall}

***307. The Politics of Ethnic Groups. (3)** Garcia
The ethnic basis of group politics in the U.S.; its historical, sociological, and psychological foundations; the role of white ethnics; traditional and nonconventional strategies and tactics; special emphasis on the politics of regional ethnic minorities. {Spring}

***308. Chicano Politics. (3)** Garcia
The status, role, and activities of Mexican/Spanish Americans in the American political system. Recommended preparation: 200 or 307.

**309. Black Politics. (3)**
Focus will be on political actions and thought of Black America. {Fall}

***310. Native Americans and Government. (3)** Harris
Examines the dual citizenship of American Indians and their unique relationship with the federal government. {Fall}

***311. The Legislative Process. (3)** Hain, Harris
The recruitment, formal and informal procedure, and power structure of legislative bodies; their place in contemporary American government.
Prerequisite: 200.

***312. The American Presidency. (3)** Sickels
The constitutional base of the office, its roles and responsibilities, and its relations with other political institutions.
Prerequisite: 200. {Fall}

***315.** [375.]**Constitutional Law: Powers. (3)** Stumpf
The separation of powers and federalism. Includes an introduction to the Supreme Court as an institution.
Prerequisite: 200. {Fall}

***316.** [376.]**Constitutional Law: Rights. (3)** Sickels
Freedom of speech, freedom of religion, privacy, procedural justice, equal protection of the laws, and other issues in and around the Bill of Rights.
Prerequisite: 200. {Spring}

***319.** [380.]**Political Socialization. (3)** Garcia
A survey and analysis of orientations of people toward their country, government, and politics; the development of these attitudes, values, and beliefs from early childhood to maturity; the influence of the school, family, peers, media, and other agents of political socialization. {Spring}

***415. Judicial Politics. (3)** Stumpf
An introduction to the structure, process, and environment of judicial policy making in the United States, with emphasis on the federal judiciary.

***419. Seminar in Contemporary Legal Issues. (3)** Sickels, Stumpf

**COMPARATIVE POLITICS**

**150. Introduction to Latin America. (3)**
(Also offered as Hist, Soc and Lat Am St 150.) Multidisciplinary introduction to regions and issues of Latin America. {Spring}

**250. Latin America Through Film. (3)** Remmer, Merkx
(Also offered as Soc and Lat Am St 250.) Interdisciplinary introduction to Latin American studies through documentary films, lectures, reading, and discussion.

***320.** [369.]**Topics in Comparative Politics. (3)‡**
Topics will be noted in appropriate class schedules. {Offered upon demand}

***321.** [351.]**Comparative Politics: Developing Countries. (3)** Remmer
Prerequisite: 220. {Fall}

***322. Authoritarian Political Systems. (3)**
Survey and analysis of twentieth-century authoritarian regimes, including fascist, communist, and military political orders.

***355. Government and Politics of Latin America.** [Government and Politics of Latin America I.]**(3)** Needler
(Also offered as Soc and Lat Am St 355.) The political dynamics of the Latin American republics, considered on a country-by-country basis. Recommended preparation: Hist 282. {Fall}

***356. Political Development in Latin America.** [Governments and Politics of Latin America II.]**(3)** Remmer
Selected topics considered cross-nationally.
Prerequisite: 220. {Spring}

***357. Government and Politics of the Soviet Union.** [Government and Politics of the Soviet Union I.]**(3)** Sorenson, Roeder
A study of the evolution of the Soviet political system with emphasis on dynamics and institutional structure.
Prerequisite: 220. {Fall}

***420.** [430.]**Political Violence. (3)** Lupsha
Examines political violence cross-culturally and cross-temporally. Emphasis is placed on theories, models, and explanation of the phenomenon.

***450. Government and Politics of Communist China. (3)** Sorenson
Examination of problems, policies, postures, and options of Communist China. {Spring}

***453. Interdisciplinary Asian Studies. (3)**
(Also offered as Geog and Hist 453.) Cross-cultural a interdisciplinary investigations of problems and method ogies current in Asian studies.

***455. Major Powers of Latin America. (3)** Needler
Politics of Argentina, Brazil, and Mexico (in some years fourth country may be added). Recommended preparatic 355 or 356. {Spring}

**INTERNATIONAL POLITICS**

***340.** [442.]**Topics in International Politics.** [Internatior Politics II.]**(3)**
Selected problems of international politics.
Prerequisite: 240.

***342. American Foreign Policy. (3)** Sorenson
Prerequisite: 240. {Fall, Spring}

***345.** [445.]**Inter-American Relations. (3)** Ray
Survey of contemporary international politics in the Weste Hemisphere. Emphasis on conflict resolution of trade a economic assistance problems, territorial disputes, ide logical issues, and integration. {Fall}

***440. International Conflict, Arms Control, and Disarm ment. (3)** Sorenson
Systematic examination of political, technological, st tegic, and economic dimensions of arms control and dis mament in a nuclear missile era.
Prerequisites: 200 and 240.

***443. International Law and Organization. (3)**
Prerequisite: 240. {Spring}

***449.** [459.]**Soviet Foreign Policies. (3)** Roeder
A survey and analysis of goals and methods of Sov foreign policies toward the West, the uncommitted cou tries, Communist China, and Eastern Europe.
Prerequisite: 220 or 357. {Spring}

***478. Seminar in International Studies. (3)** Slavin
(Also offered as Econ, Geog, M&CL, Soc 478.) Designed provide seniors from any discipline an opportunity to apj an international perspective to their undergraduate trainin Each student will present a term project drawing upon t particular background and relating it to international m ters. **Open only to seniors.**

**POLITICAL THEORY**

***361. Classical Political Theory. (3)** Rhodes
Prerequisite: 200 or 260 recommended. {Fall}

***362. Modern Political Theory. (3)** Rhodes
Prerequisite: 200 or 260 recommended. {Fall}

***363. Latin American Political Theory. (3)**
The development of political philosophy in Latin Ameri with emphasis on contemporary thinkers. Knowledge modern Latin American history is recommended. {Offer upon demand}

**368. American Political Thought. (3)** Rhodes
Recommended preparation: 200. Offered upon demand

**PUBLIC POLICY**

**204. The Environmental Problem. (3)** DeYoung, Sorenso Multidisciplinary introduction to the environmental pro lem. {Spring}

***350. Public Finance. (3)** Therkildsen
(Also offered as Econ 350.) Taxation, government borro ing, financial administration, and public expenditures.
Prerequisite: Econ 201.

***371.** [381.]**Public Policy Theories and Perspectives. (** Lupsha
Introduction to the major concepts and theoretical form lations underlying the field of public policy. {Spring}

***372.** [301.]**Urban Politics and Policy. (3)** Lupsha
Introduction to urban politics and policy, including surv of government forms, political processes, and the intera tion of urban institutions and policies.
Prerequisite: 200

***375.** [421.]**Introduction to Public Management. (3)**
(Also offered as Pub Ad 421.) The organization, administr tion, and operation of federal, state, and local agencies wi emphasis on the dynamics and problems involved in carr ing out public policy.

**465. City Planning Methods. (3)** Anderson
Also offered as Econ and Arch 465.) Topics include perceptual form of the city; planning and decision-making theory; national and regional settlement policy; public control over development; direct action techniques. This is a multidisciplinе introduction to urban studies, with emphasis on planning and control. {Fall}

**470. [410.]Public Policy Analysis. (3)** DeYoung
Examines the allocative, distributive, and regulatory problems common to all governments and provides techniques necessary to analyze the policies resulting from these problems.
Prerequisite: 200. {Spring}

**475. [470.]Environmental Politics. (3)** DeYoung, Sorenson
A study of political problems of environmental protection and land use planning.

**GRADUATE COURSES**

**500 Issues in Contemporary Public Administration. (3)**
Also offered as Pub Ad 500.)

**501. Interdepartmental Seminar in the Culture of the United States. (3)**
See Am St 501.) {Fall, Spring}

**510. Pro-Seminar in American Government and Politics. (3)**
{Offered upon demand}

**511. Research Seminar in American Government and Politics. (3)**
{Offered upon demand}

**512. Topics in American Government and Politics. (3)‡**
May be repeated for credit. {Fall}

**520. Pro-Seminar: Comparative Government and Politics. (3)**
{Offered upon demand}

**521. Research Seminar in Comparative Government and Politics. (3)**
{Offered upon demand}

**522. The Administrative Process. (3)** Smithburg
(Also offered as Pub Ad 522.)
Prerequisite: 421 or comparable experience. {Spring}

**525. Pro-Seminar on Latin American Politics. (3)**
(Also offered as Lat Am St and Soc 525). Previous work in the field is highly desirable and reading knowledge of Spanish is required. {Fall}

**530. Pro-Seminar in International Relations. (3)**
{Offered upon demand}

**531. Research Seminar in International Relations. (3)**
{Offered upon demand}

**535. Comparative Public Administration. (3)** Heady
(Also offered as Pub Ad 535.)
Prerequisite: 421 or approval of instructor. {Fall}

**540. Pro-Seminar in Political Theory. (3)**
{Offered upon demand}

**541. Research Seminar in Political Theory. (3)**
{Offered upon demand}

**551-552. Problems. (1-3, 1-3 hrs. each semester)**

**555. Interdisciplinary Seminar: Asia. (3)**
(Also offered as Geog, Hist 555.)

**570. Pro-Seminar in Public Policy. (3)**
(Also offered as Pub Ad 570.) {Offered upon demand}

**584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3)** Lieuwen, Merkx, Needler, Schwerin
(Also offered as Econ, Hist, Soc 584.) {Spring}

**585. The Teaching of Political Science. (3)**
Prerequisite: graduate standing.

**599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

**699. Dissertation. (3-12 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# PSYCHOLOGY

Henry Carlton Ellis, Chairperson
Psychology 178, 277-4249 or 4121

**PROFESSORS:**

David Theodore Benedetti, Jr., Ph.D., University of Colorado
Henry Carlton Ellis, Ph.D., Washington University
Dennis Michael Feeney, Ph.D., University of California, Los Angeles
Douglas Peter Ferraro, Ph.D., Columbia University
Peder Jack Johnson, Ph.D., University of Colorado
Frank Anderson Logan, Ph.D., University of Iowa
John Marshall Rhodes, Ph.D., University of Southern California
Samuel Roll, Ph.D., Pennsylvania State University
Sidney Rosenblum, Ph.D., University of Iowa
Britton Kenneth Ruebush, Ph.D., Yale University

**ASSOCIATE PROFESSORS:**

Harold D. Delaney, Ph.D., University of North Carolina
Thomas Patrick Friden, Ph.D., University of Illinois
John Paul Gluck, Jr., Ph.D., University of Wisconsin
William C. Gordon, Ph.D., Rutgers University
Richard Jerome Harris, Ph.D., Stanford University

**ASSISTANT PROFESSORS:**

Mark Allan Brecht, Ph.D., Johns Hopkins University
Michael J. Dougher, Ph.D., University of Illinois at Chicago Circle
Gordon Karl Hodge, Ph.D., University of California, Los Angeles
Jean E. Newman, Ph.D., University of Toronto
Kevin E. O'Grady, Ph.D., University of Connecticut
Eligio R. Padilla, Ph.D., University of Washington
Gary H. Ritchey, Ph.D., University of California, San Diego

**DISTINGUISHED PROFESSOR:**

G. Robert Grice, Ph.D., University of Iowa

**PROFESSOR EMERITUS:**

Ralph David Norman, Ph.D., Ohio State University

The student wanting a complete introduction to psychology should take both 101 and 102 with their associated laboratories, 103L and 104L. These courses are strongly recommended for all students and are **required** for major and minor programs and for many upper-level courses. However, credit can be obtained for 101 and/or 102 separately, and they may be taken in either order. Normally, students should take at least one 200-level course before registering for more advanced courses. In arranging his/her program, the student should be guided by the numbering system. Not only does the first number indicate the approximate level at which the material will be taught, but the second number indicates the area within psychology with which the course is primarily concerned. The code is as follows: 0—basic, general psychology; 1—applications of psychology; 2—child/developmental psychology; 3—clinical/personality psychology; 4—comparative/physiological psychology; 5—special topics in psychology;6—psychology of learning, motivation, and perception; 7—social psychology; 9—individual topics in psychology. (The third number has no systematic meaning except, where indicated, year-long courses are numbered sequentially.) Frequently, advanced courses in each of these areas require earlier courses, and such a progression is normally desirable even when not required. However, all prerequisites for any course may be waived by permission of instructor.

More complete course descriptions are available to any interested student in the Department office. **Acceptance of transferred credits toward a major or minor in psychology must be approved by the department chairperson.**

**MAJOR STUDY**

The psychology major is encouraged to broaden his or her training in related fields, especially biology, mathematics, and the social sciences. Toward this end, up to 8 hours credit toward the major requirements (if not used toward the minor requirement) may be counted from courses in other departments when justified by the student in relation to his or her program and approved by an adviser.

The standard major requires 26 hours credit beyond 8 hours general psychology. Within these, the B.A. degree requires either 200 or 201, a laboratory course numbered above 300, and a minor in or distributed among A&S departments other than biology, chemistry, computer/computing science, mathematics, or physics. The B.S. degree requires 201, 202, a laboratory course numbered above 300, and a minor in or distributed among biology, chemistry, computer/ computing science, mathematics, or physics. For a distributed minor with a B.A. or B.S. there must be at least one advanced course in each of two or more areas and a total minimum of 30 hours.

**MINOR STUDY**

12 hours beyond 8 hours general psychology.

**DEPARTMENTAL HONORS**

Superior sophomore students, especially those anticipating graduate study in psychology or interested in research training, are invited to apply for admission to the Undergraduate Honors Program beginning in the junior year. Students participating in this program are eligible to graduate with departmental honors if recommended by the faculty on the basis of outstanding performance.

The Honors major requires 29 hours beyond 8 hours general psychology, including 201, 202, 391, 392, 491, 492, and a laboratory course numbered above 300.

**100. Social Science. (4)**
An introduction to the social science disciplines. Emphasis on intensive skills improvement in communications, reading comprehension, study techniques and logical reasoning which are required for further study in any of the social science disciplines. Course themes may vary by department, but all courses will be interdisciplinary and will emphasize skills. For students who score 13 or below in Social Science on the ACT or who are admitted with a Social Science deficiency.

**101. General Psychology I. (3)** Ferraro, Gluck, Gordon, Hodge, Newman
An introduction to basic processes underlying behavior. The course focuses on principles of learning, memory and motivation, as well as areas such as perception, language, states of awareness and biological bases of behavior. {Fall, Spring}

**102. General Psychology II. (3)** Brecht, Dougher, O'Grady, Ritchey, Roll
An introduction to patterns of human behavior. The course focuses on the topics of human growth and development, intelligence, personality, abnormal behavior and therapy. {Fall, Spring}

**103L. General Psychology I Laboratory. (1)** Feeney
Laboratory projects relevant to topics covered in 101. Students conduct, analyze, and write about psychological experiments with the goal of developing understanding of the scientific method as applied to basic psychological concepts.
Pre- or corequisite: 101. 2 hrs. lab. {Fall, Spring}

**104L. General Psychology II Laboratory. (1)** Feeney
Laboratory projects relevant to topics covered in 102.
Pre- or corequisite: 102. 2 hrs. lab. {Fall, Spring}

**107. Introductory Psychology. (3)** Staff
A general introductory course covering the major topics in psychology. Intended for special summer school students; not acceptable as a substitute for 101 or 102. {Summer only}

**200. Statistical Principles. (3)** Delaney, Friden, Harris
Presentation of the basic principles of the description and interpretation of data with a minimum of computational details. Provides an acquaintance with statistical principles appropriate to a liberal education. Students planning graduate study in any field are advised to take 201-202. {Summer, Fall, Spring}

**201. Introduction to Probability and Statistics. (3)** Staff
(Also offered as Math 102 and Soc 280.) An introduction to sampling and probability theory, descriptive and inferential statistics, including essential mathematical and computational details.
Prerequisite: knowledge of algebra at high school level, such as provided by Math 020. {Summer, Fall, Spring}

**202. Psychological Research Techniques. (3)** Newman
Application of the concepts covered in 201. Includes discussion of basic principles of research design and scientific methodology as applied to psychology.
Corequisite: 201. {Fall, Spring}

**210. Educational Psychology. (3)** Rosenblum
The contribution of psychological theory, research and methods to our understanding of the educational process.
Prerequisite: 101 or 102. {Fall, Spring}

**211. Applied Psychology. (3)** Gordon
Topics in Applications to everyday life, such as personnel selection, consumer psychology, and environmental problems.
Prerequisites: 101 and 102. {Spring}

**220. Developmental Psychology. (3)** Ritchey, Rosenblum
Description of the more salient aspects of the behavior and development of children and adolescents. Particular emphasis is placed on pertinent psychological research and practical applications to life situations.
Prerequisite: 102. {Fall, Spring}

**230. Psychology of Adjustment. (3)** Benedetti, Rhodes
An introduction to concepts and models of human adjusting.
Prerequisite: 102. {Fall, Spring}

**240. Physiological Psychology. (3)** Feeney, Hodge
A general survey of the biological foundations of behavior. Emphasis is on the central nervous system.
Prerequisite: 101 or 102 or Biol 121L. {Summer, Fall}

**260. Psychology of Learning and Memory.** [Psychology of Learning]**(3)** Delaney, Ellis, Logan
Survey of the variety of laboratory learning situations, with an emphasis on the application of principles to practical situations. Topics range from simple processes such as conditioning to complex processes such as transfer, memory, and concept formation.
Prerequisite: 101. {Summer, Fall, Spring}

**270. Interpersonal Relations. (3)** Harris
Exploration of the relative merits of literature, philosophy, psychoanalytic case studies, observations of real-life interactions and laboratory experiments as sources of understanding interpersonal relations.
Prerequisite: 102.

**271. Psychology of Sexual Identity. (3)** O'Grady
Exploration of the ways in which sexual identity influences or fails to influence intellectual, emotional, and social behavior. {Spring}

***300. Intermediate Statistics. (3)** Friden, Harris
Complex analysis of variance designs (factorial, mixed-model, Latin square, unequal-n) and nonparametric tests.
Prerequisite: 200 or 201. {Fall}

***310.** [410.]**Psychological Testing. (3)** O'Grady
Problems related to mental measurement; review of various types of tests and their practical applications. Emphasis is on the pragmatic and theoretical issues in the assessment of individual difference among humans.
Prerequisite: 200 or 201. {Fall}

***321. Introduction to Child Research. (3)** Staff
The study of the young child with emphasis on research, theory, and methodology. Studies using preschool and lower elementary school children are examined in terms of methodology, theoretical basis, results and interpretations.
Prerequisites: 101 and 220. {Fall}

***322L. Child Research Laboratory. (2)** Staff
Research projects related to topics in 321.
Pre- or corequisite: 321. (Students must have 4-hr. block of time during normal school hours and means of transportation.) 4 hrs. lab. {Fall}

***331. Psychology of Personality. (3)** Dougher, O'Grady, Roll
Survey of theory, research, and applications of both classical and contemporary approaches to the study of personality. Emphasis is on the usefulness and limitations of current research when applied to practical problems.
Prerequisite: 230 or 260. {Fall, Spring}

***332. Abnormal Behavior. (3)** Miller, Padilla
Review of the historical, scientific, and ethical issues in the field of psychopathology. Categorization of deviant behavior is regarded as less important than theories of abnormal behavior development, systems of therapy, and relevant research.
Prerequisite: 230. {Fall, Spring}

***352. Alcoholism. (3)** Miller
Causes, course, prevention and treatment of problem drinking.
Prerequisite: 102. {Fall}

***361. Human Learning and Memory. (3)** Ellis, Johnson
Traditional and contemporary research and theory in human learning, transfer, and memory. Focus is on the extent to which various human skills can be understood in terms of basic principles.
Prerequisite: 260. {Fall}

***362L. Human Learning and Memory Laboratory. (2)** Johnson
Laboratory projects related to topics in 361.
Prerequisite: 200 or 201; corequisite: 361. 4 hrs. lab. {Fall}

***363. Psychology of Perception. (3)** Friden
Study of the methods organisms use to gain information about objects. The sensory processes are discussed as a basis for description of more complex perceptual phenomena.
Prerequisite: 260. {Spring}

***364L. Psychology of Perception Laboratory. (2)** Friden
Laboratory projects related to topics in 363.
Prerequisite: 200 or 201; corequisite: 363. 4 hrs. lab. {Spring}

***365. Learning: Conditioning. (3)** Ferraro
Practical application of classical and operant conditioning principles to behavioral modification, behavior therapy, behavioral medicine and behavioral pharmacology.
Prerequisite: 230 or 260. {Spring}

***366L. Conditioning Laboratory. (2)** Ferraro
Laboratory projects related to topics in 365.
Corequisite: 365. 4 hrs. lab. {Spring}

***367. Introduction to Psycholinguistics. (3)** Newman
(Also offered as Ling 337.) Theoretical and methodological issues in psycholinguistics, including comprehension, speech perception and production, language acquisition, bilingualism, brain and language, reading.
Prerequisites: 101 or 102 or Ling. 292. {Fall}

***368. Sensation. (3)** Friden
Exploration of sense organ operation with emphasis on both behavioral and physiological data.
Prerequisite: 260. {Fall}

***371. Social Psychology. (3)** Harris
The behavior of organisms (primarily humans) as affected by the mutual interdependence among organisms. Emphasis on mathematically stated hypotheses about social interaction, including judgment of oneself and others, attitude change, leadership and conformity.
Prerequisite: 230 or 260. {Fall, Spring}

***372L. Social Psychology Laboratory. (2)** Harris
Laboratory projects relevant to topics in 371.
Prerequisite: 200 or 201; corequisite: 371. 4 hrs. lab. Spring}

***373. Cross-cultural Psychology. (3)** Padilla
The relationship of culture to thinking, learning, perception, and personality. Methods, findings, and theoretical perspectives in cross-cultural research will be examined.
Prerequisites: 102 and at least one upper-division course in psychology or a course in anthropology. {Fall}

**391. Junior Honors Seminar. (3)** Gordon
Discussion of the history and systems of psychology and the philosophy of science, particularly as related to current topics in psychology.
Prerequisites: 260 and permission of instructor; pre- or corequisites: 201 and 202. {Fall}

**392. Junior Honors Seminar. (3)** Gordon
Continuation of 391. {Spring}

***400. History of Psychology. (3)** Benedetti
An introduction to the major developments and systems in the history of psychology.
Prerequisite: 101 or 102. {Spring}

***401. Mathematical Psychology. (3)** Delaney, Harris
Survey of mathematical descriptions of behavior.
Prerequisite: 200 or 201. {Offered upon demand}

***402. Multivariate Statistics. (3)** Friden, Harris, O'Grady
(Also offered as Math 447.) Multivariate analysis of variance, factor analysis, and canonical correlation. Analysis of situations involving more than one dependent variable, including use of library computer programs.
Prerequisite: 200 or 201 or equivalent. {Spring in alternate years}

***412. Advanced Educational Psychology. (3)** Delaney, Rosenblum
The contributions of various theories of learning and teaching to current educational practice at the preschool, elementary, and secondary levels. Relevant social-motivational-emotional variables are explored.
Prerequisite: 210 or 260. {Spring in alternate years}

***413. Industrial and Organizational Psychology. (3)** Brecht
Survey of industrial/organizational psychology as a science and profession. Techniques of problem analysis, collection, and interpretation of relevant data and application of findings are discussed in relation to a variety of organizational systems.
Prerequisite: 101 or 102. {Fall}

***414. Human Factors Psychology. (3)** Brecht
Application of psychological principles to the design and evaluation of man-environment systems.
Prerequisite: 101 or 102. {Spring}

***415. Environmental Psychology. (3)** Brecht
The impact of environments on human behavior drawn from psychology, anthropology, architecture, and urban studies. Applications of behavioral data to the design of environmental systems.
Prerequisite: 101 or 102. {Fall}

***417. Programmed Learning. (2)** Ellis, Ferraro
Application of principles of learning necessary for the preparation and use of programmed instructional materials, with practice in frame-writing, construction, and evaluation of programs. {Offered upon demand in Summer}

***420. Advanced Developmental Psychology. (3)** Ritchey
Investigation of the theoretical bases and critical issues in the area of developmental psychology. {Spring}

***428. Cognitive Development. (3)** Johnson, Ritchey
Research and theory concerning the development of conceptual, intellectual and linguistic behavior in children.
Prerequisites: 101, 102, and 220. {Fall}

***432. Child Clinical Psychology. (3)** Rosenblum
Theories and practices related to an understanding of children and adolescents who deviate from normal development either intellectually, educationally, emotionally, physically, or in some combination. Relevant family variables are considered.
Prerequisite: 220. {Spring}

**433L. Child Clinical Psychology Laboratory. (2)** Rosenblum
Supervised practicum experience with children manifesting a variety of learning and developmental disturbances in school and treatment settings.
Pre- or corequisite: 432 and permission of instructor. {Spring}

***435. Experimental Hypnosis. (3)** Staff
A presentation of the research methodology and findings from the areas of experimental hypnosis. Designed to give students an appreciation of the methods, findings, and conclusions of recent hypnotic research. This is **not** a course on how to do hypnosis, but rather on how to investigate altered states of consciousness.
Prerequisite: 331 or 332. {Fall in alternate years}

***440. Advanced Physiological Psychology. (3)** Feeney, Hodge
Critical issues, concepts, and methodologies in psychobiology and the neurosciences. Emphasis on current research.
Prerequisite: 240 and/or permission of instructor. {Spring}

***441L. Advanced Physiological Psychology Laboratory. (2)** Feeney, Hodge
Laboratory projects related to topics in 440.
Prerequisite: 200 or 201; corequisite: 440. 4 hrs. lab. {Spring}

***442. Brain Mechanisms of Information Processing and Storage. (3)** Feeney, Hodge
Basic electrical and chemical processes of the brain and their relation to information input, coding, storage, and output.
Prerequisite: 240. {Spring}

***444. Introduction to Clinical Neuropsychology. (3)** Rhodes
Application of psychophysiological techniques and principles to clinical problems.
Prerequisites: 240 and permission of instructor. {Fall}

***445. Comparative Psychology. (3)** Gluck
Heredity, maturation, learning, and the higher mental processes as revealed in various animals.
Prerequisite: 260. {Fall in alternate years}

***446L. Comparative Psychology Laboratory. (2)** Gluck
Laboratory projects related to topics in 445.
Prerequisite: 200 or 201; corequisite: 445. 4 hrs. lab. {Fall in alternate years}

***447. Psychopharmacology: Drugs and Behavior.** [Psychopharmacology.]**(3)** Hodge
Techniques and strategies of psychopharmacological research; biochemical mechanisms of neuronal conduction; psychoactive drugs: use and abuse.
Prerequisites: 240 and/or permission of instructor. {Fall}

***448. Primate Behavior. (3)** Gluck
Primate developmental-social patterns as studied in both field and laboratory contexts. Emphasis also placed on the study of learning abilities in the primate order.
Prerequisites: 101, 260. {Fall in alternate years}

***449L. Primate Behavior Laboratory. (2)** Gluck
Research techniques relevant to the study of social behavior and learning abilities of nonhuman primates. Students will conduct and design small research projects.
Corequisite: 448. {Fall in alternate years}

***450. Special Topics in Psychology. (1-3 hrs. each semester)** Staff
Study of any psychological topic not otherwise included in the curriculum upon expression of mutual interest by students and faculty. {Offered upon demand}

***452. Behavior Therapies. (3)** Dougher, Miller
A survey of clinical behavior therapies, including techniques based upon learning theory, self-control, cognitive and social psychological principles. Emphasis is upon treatment outcome research and the practical application of methods to clients' life problems.
Prerequisite: permission of instructor. {Fall}

***453L. Behavior Therapies Laboratory. (2)** Dougher, Miller
Laboratory projects related to topics in 452.
Prerequisites: 260, 332; corequisite: 452. 4 hrs. lab. {Fall}

***461. Psychobiology of Motivation. (3)** Feeney
Methods, findings, and theories of motivation based on ethology, behavioral psychology, and physiological psychology. Emphasis is on the biological bases of instinct, hunger, and sexuality.
Prerequisite: 240. {Spring}

***462L. Psychobiology of Motivation Laboratory. (2)** Feeney
Laboratory projects related to topics in 461.
Prerequisites: 103L and 200 or 201; corequisite: 461. 4 hrs. lab. {Spring}

***463. Human Performance. (3)** Johnson
The study of skilled mental and physical performance and the psychological processes and structures underlying these activities. Language comprehension, skilled reading, and fine perceptual-motor movements, like those involved in sports activities, typing, and speech production, will be considered. The particular skills emphasized will vary from semester to semester.
Prerequisite: 260. {Fall in alternate years}

***464L. Human Performance Lab. (2)** Johnson
Laboratory projects related to topics in 463.
Prerequisite: 200 or 201; corequisite: 463. 4 hrs lab. {Fall in alternate years}

**467. Thinking and Reasoning. (3)** Johnson
(Also offered as Comp Sci 438.) Analysis of the cognitive processes underlying complex mental activities such as problem-solving, creativity, and syllogistic reasoning. A major goal of the course is to gain better an understanding of human intelligence by studying the role of attention and memory and related psychological processes and strategies as they relate to thinking and reasoning.
Prerequisite: 367 or permission of instructor. {Spring in alternate years}

**468L. Thinking and Reasoning Lab. (2)** Johnson
Laboratory projects related to topics in 467.
Prerequisite: 200 or 201; corequisite: 467. {Spring in alternate years}

**479. Advanced Topics in Social Psychology. (3)** Harris
(Also offered as Soc 479.) Intensive study of one area of social psychology chosen by the instructor; e.g., attribution theory, experimental games, person perception.
Prerequisites: Psych 371 or equivalent introductory social psychology courses. {Spring in alternate years}

**491. Senior Honors Seminar. (3)** Johnson
Experimental methods and laboratory techniques. Senior thesis based on independent research.
Prerequisite: 392. {Fall}

**492. Senior Honors Seminar. (3)** Johnson

**499. Undergraduate Problems. (1-3 hrs. each semester, maximum of 6)**
Prerequisite: permission of instructor.

***501. Advanced Statistics. (3)** Friden

***502. Design of Experiments. (3)** Delaney, Ellis

***505. Research Techniques in Experimental Psychology. (2)** Ferraro

***506. Seminar in Mathematical Psychology. (3)** Delaney

***523. Seminar in Social Development of the Child. (3)** Rosenblum

***524. Seminar in Functional Analysis of Child Development. (3)** Staff

***525. Seminar on Infancy. (3)** Staff

***528. Seminar in Cognitive Development. (3)** Johnson

***531. Introduction to Clinical Psychology. (3)** Rosenblum

***532. Seminar in Behavior Pathology. (3)** Gluck, Padilla

***533. Psychological Evaluation: Cognitive Functions. (3)** Dougher

***534L. Practicum in Assessment of Cognitive Function.** [Assessment of Cognitive Functions Laboratory.](2) Dougher

***535. Psychological Evaluation: Personality Functions. (3)** O'Grady, Roll

***536L. Practicum in Assessment of Personality Functions.** [Assessment of Personality Functions Laboratory.](2) O'Grady, Roll

***537. Seminar in Developmental Abnormalities. (3)** Rosenblum

***538. Seminar in Psychoanalytic Ego Psychology. (3)** Roll

***541. Animal Learning: Complex Processes. (3)** Gluck

***542. Seminar in Sensory Neuropsychology. (3)** Feeney

***547. Seminar in Psychopharmacology. (3)** Hodge

***551. Graduate Problems. (1-3)††**

***560. Seminar in Child Language. (3)** Staff

***561. Theories of Learning. (3)** Ferraro, Logan

***562. Human Learning and Cognition. (3)** Ellis

***563. Seminar in Human Memory.** [Seminar in Human Learning: Transfer and Memory.](3) Ellis

***564. Seminar in Classical Conditioning. (3)** Grice

***566. Experimental Analysis of Operant Behavior. (3)** Ferraro

***567. Theories of Perception. (3)** Friden

***568. Cognitive Processes. (3)** Johnson

***569. Seminar in Psycholinguistics.** [Seminar in Semantics.](3)‡ Newman
(Also offered as Ling 569.)

***571. Seminar in Social Psychology. (3)** Harris

***572. Theories or Personality. (3)** Roll

***573. Seminar on Cross Cultural Research. (3)** Padilla, Roll

***599. Master's Thesis. (1-6 hrs. per semester)**

***600. Clinical Practicum. (1-3)††** Clinical Faculty
Prerequisite: permission of instructor.

***601. Methods of Behavioral Research. (3)** Grice

***630. Seminar in Psychoanalytic Psychotherapy. (3)** Roll

***631. Practicum in Psychotherapy with Adults I.** [Psychotherapy with Adults I.](3) Rhodes

***632. Practicum in Psychotherapy with Adults II.** [Psychotherapy with Adults II.](3) Rhodes

***633. Case Formulation Seminar. (3)** Miller

***634. Seminar in Treatment of Children, Adolescents and Families. (3)** Ruebush

***641. Seminar in Physiological Psychology. (3)‡** Feeney, Hodge

***650. Special Topics in Psychology. (1-3)** Staff

***664. Stimulus Control in Operant Conditioning. (3)††** Ferraro, Logan

***666. Seminar in Perceptual Learning. (3)** Ellis

***699. Dissertation. (3-12 hrs. per semester)**

# PUBLIC ADMINISTRATION

T. Zane Reeves, Division Director
Mesa Vista 3059, 277-3312

**PROFESSORS:**

Gerald J. Boyle, Ph.D., Syracuse University
T. Zane Reeves, Ph.D., University of Southern California
Leonard Stitelman, Ph.D., University of Colorado

**ASSOCIATE PROFESSOR:**

Alan B. Reed, Ph.D., University of Texas

**ASSISTANT PROFESSOR:**

Jose Amaro-Reyes, Ph.D., University of Pittsburgh
Timothy J. De Young, Ph.D., Claremont Graduate School
George M. Guess, Ph.D., University of California-Riverside
Sheldon Kamieniecki, Ph.D., State University of New York at Buffalo

**RESEARCH ASSOCIATE PROFESSOR:**

Jan Knippers Black, Ph.D., American University

**PROFESSOR EMERITI:**

Ferrel Heady, Ph.D., Washington University
Albert H. Rosenthal, Ph.D., Harvard University
Donald W. Smithburg, Ph.D., Harvard University

For a description of the curriculum leading to the degree Masters of Arts in Public Administration, see the Graduate Programs Bulletin.

***421. Introduction to Public Management. (3)**
(Also offered as Pol Sci 375.) The organization, administration, and operation of federal, state, and local agencies with emphasis on the dynamics and problems involved in carrying out public policy. (No credit for Division students.)

***497. Social Planning Seminar. (3)**
(Also offered as CRP 497.) Consequences of social and cultural change on design and planning.
Prerequisite: senior standing. {Fall, Spring}

***500. Issues in Contemporary Public Administration. (3)**
(Also offered as Pol Sci 500.)

***521. Administrative Behavior. (3)**

***522. Administrative Process. (3)**
(Also offered as Pol Sci 522.)

***523. Administration of Urban and Local Government.** [Urban Public Management.](3)

***524. Intergovernmental Administrative Problems. (3)**

***525. Public Personnel Administration. (3)**

***530. Public Health Administration. (3)**

***535. Comparative Public Administration. (3)**
(Also offered as Pol Sci 535.)
Prerequisite: 500 or permission of instructor.

***540. Administration of State Governments.** [State and Local Administration.](3)

***544. Public Budgeting and Financial Management. (3)**

***545. Budget Process. (3)**
(Also offered as Econ 445.)

***550. Automation in Public Management. (3)**

***551. Problems. (1-3 hrs. per semester)**
Prerequisite: permission of instructor.

***555. Workshop for Interns. (1-3 hrs. per semester, maximum of 6)**
Prerequisite: permission of instructor.

***560. Public Policy and Aging. (3)**

***570 Pro-Seminar in Public Policy. (3)**
(Also offered as Pol Sci 570.)

***575. Seminar on Energy Administration. (3)**
(Also offered as Econ 343 and CRP 575.)

***590. Division Seminar. (3)**

***595. Public Science Policy and Administration. (3)**

***596. Seminar: Public Science Policy and Administration. (3)**
Continuation of 595.

***597. Research Methodology. (3)**
Prerequisite: 500.

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate Programs Bulletin for total credit requirements.

# RELIGIOUS STUDIES

Andrew Burgess, Chairperson
Humanities Building 533, 277-4009

**COMMITTEE IN CHARGE:**

Andrew Burgess, Philosophy
Matthieu Casalis, Philosophy
Shlomo Karni, Electrical Engineering
Patricia Stephens, Nursing
Fred Sturm, Philosophy
Donald Sullivan, History

**ASSOCIATED FACUTLY:**

Alfonso Ortiz, Anthropology
Ferenc Szasz, History

Religious Studies is an interdisciplinary and interdepartmental program offering a wide range of approaches to the study of religions. Students enter such a program with a variety of professional and personal goals. (1) Some adopt the major or minor bacause they look for a broad program using a variety of methods to focus upon an area of great personal interest. (2) Others take a dual major, in order to attain a balance between disciplinary method and interdisciplinary content. (3) Many students use the major or minor as a pre-professional program that provides background for further study in counseling, ministry, religious education, law, or graduate work in Religious Studies.

**MINOR STUDY**

The minor requires 18 hours in Religious Studies, of which at least 9 must be in Philosophy.

**MAJOR STUDY**

The major requires 33 hours in Religious Studies, of which at least 18 must be at the upper division level. Required are Phil 230 or 231; Phil 232; Phil 263; Phil 264; and Phil 447. In addition to the four lower division required courses, the student must also take at least one other course (which may include Phil 447) in each of the four distributional areas—Asian Religions, Western Religions, Biblical Studies, and Religion in America.

**DUAL MAJOR**

Students may combine a major in Religious Studies with another major. For students with such dual majors, the total number of hours required for the Religious Studies major is reduced from 33 to 30, while the other requirements for the major remain the same.

**Phil 107. Living World Religions. (3)**

**Phil 247. Studies in Religions. (3)‡**

**Phil 347. Topics in Religious Studies. (3)‡**

***Phil 447. Seminar in Religious Studies. (3)‡**

**ASIAN RELIGIONS**

**Phil 263. Eastern Religions. (3)**

**Phil 334. Indian Philosophy. (3)**

***Phil 336-337. Chinese Philosophy I-II. (3, 3)**

***Hist 358. Traditional India. (3)**

***Hist 359. Modern India. (3)**

**Hist 456. Islam. (3)**

**WESTERN RELIGIONS**

**Phil 264. Western Religions. (3)**

***Hist 301. History of the Jewish People to 1492. (3)**

***Hist 302. Modern History of the Jewish People. (3)**

***Phil 304. Medieval European Philosophy. (3)**

***Hist 305. History of Christianity to 1517. (3)**

***Hist 306. History of Christianity, 1517 to Present. (3)**

***Hist 325. Reformation Era, 1500-1600. (3)**

***Phil 360. Christian Classics. (3)**

***Phil 361. Modern Christian Thought. (3)**

***Phil 365. Philosophy of Religion. (3)**

**BIBLICAL STUDIES**

**Phil 230. Old Testament History. (3)**

**Phil 231. Old Testament Prophets. (3)**

**Phil 232. New Testament. (3)**

Advanced Biblical Studies courses are taught under topics numbers, especially Phil 347 and Phil 447. Topics in New Testament Greek are usually offered under Greek 301 and Greek 302.

**RELIGION IN AMERICA**

**Amer St 308. The Jewish Experience in America. (3)**

***Anth 333. Ritual Symbols and Behavior. (3)**

***Soc 422. Sociology of Religion. (3)**

***Soc 532. Seminar: Sociology of Religion. (3)**

***Anth 536. Seminar: Theories of Symbolic Action. (3)**

In addition to the above courses, the following courses have been offered or are planned under topics numbers: (1) in ASIAN RELIGIONS: Ch'an and Zen Buddhism; Buddhist Epistemology; History of Indian Philosophy and Religion; Philosophies and Religions of India—The Last Thousand Years; Mysticism East/West; Chinese Buddhism Philosophical Tradition; Evolution of Indian Religious Thought; Religions of India: Medieval and Modern; Sanskrit; (2) in WESTERN RELIGIONS: Liberation Theology; Introduction to Judaism; Medieval Tales of Wonder; Aquinas; Western Mysticism; Sociolinguistics of Jewish Languages; Kierkegaard; Tillich; (3) in BIBLICAL STUDIES: Psalms; Synoptic Gospels; Paul and Early Christianity; Jesus and the Gospels; New Testament Greek; (4) in RELIGION IN AMERICA; History of Religion in America; Religious Beliefs and Health Care; The New England Way; Latin American Liberation Theology; History of the American Sermon; American Literature and Religion; Seminar: The Jewish Experience in the United States.

A complete listing of courses currently approved for credit in Religious Studies may be obtained from the Chairperson of the Religious Studies Program.

The student may include among courses for a major or minor some advanced work in such languages as Chinese, Greek, Hebrew, and Sanskrit, when these courses are integrated with work in scripture studies.

# RUSSIAN STUDIES

Philip G. Roeder, Chairperson
Ortega Hall 319A, 277-5231

**COMMITTE IN CHARGE**

**PROFESSOR**

Paul Jonas, Ph.D., Columbia University, (Economics)
Richard Murphy, Ph.D., Clark University, (Geography)

**ASSOCIATE PROFESSOR**

Richard Robbins, Ph.D., Columbia University, (History)

**ASSISTANT PROFESSORS**

Natasha Kolchevska, Ph.D., University of California (Berkley), (Modern Language)
Byron Lindsey, Ph.D., Cornell University, (Modern Language)
Philip Roeder, Ph.D., Harvard University, (Political Science)

**LECTURER**

Gerald Slavin, Ph.D., University of New Mexico, (Advisement)

The combined major in Russian studies is administered by the interdepartmental committee listed above. The object of the program is to provide the student with a broad knowledge of modern Russia through study of the social science, humanities, and language. Study of the Russian language beyond a reading knowledge is required. The major requires no minor field for graduation. The program also offers a minor.

**MAJOR IN RUSSIAN STUDIES**

Please request a copy of the program description from the Committee Chairperson.

**MINOR IN RUSSIAN STUDIES**

Please request a copy of the program description from the Committee Chairperson.

# SOCIOLOGY

Pedro R. David, Chairperson
1915 Roma NE #120, 277-2501 and 5918

**PROFESSORS:**

Theodore Abel, Ph.D., Columbia University (Scholar-in-Residence)
Pedro R. David, Ph.D., Indiana University
George A. Huaco, Ph.D., University of California, Berkeley
Richard F. Tomasson, Ph.D., University of Pennsylvania

**ASSOCIATE PROFESSORS:**

Dodd H. Bogart, Ph.D., University of Michigan
Patrick H. McNamara, Ph.D., University of California, Los Angeles
Harold C. Meier, Ph.D., University of Colorado
Gilbert W. Merkx, Ph.D., Yale University
Nelson P. Valdes, Ph.D., University of New Mexico
Charles F. Woodhouse, Ph.D., University of California, Berkeley

**ASSISTANT PROFESSORS:**

Richard M. Coughlin, Ph.D., University of California, Berkeley
Gary D. LaFree, Ph.D., Indiana University
Philip A. May, Ph.D., University of Montana
Arthur. W. St. George, Ph.D., University of California, Davis
Paul D. Steele, Ph.D., University of Texas.

The student interested in the discipline of sociology should take both 101 and 110. These courses are recommended for all beginning students and are required for a major or minor in sociology. Most higher level courses specify one or both of these introductory courses as prerequisites.

Normally, students should follow the introductory courses with at least one or two 200-level courses before attempting more advanced courses. In some areas there is a progression from less to more advanced courses and following such progressions is strongly recommended even when the lower level course is not explicitly listed as a prerequisite for the higher level course, e.g. 213 (Deviant Behavior) should be taken before taking 312 (Juvenile Delinquency) or 313 (Criminology) and 312 and/or 313 should be taken before attempting 413 (Criminal Justice) or 414 (Sociology of Corrections).

**MAJOR STUDY AND FIELDS OF CONCENTRATION**

All sociology majors must complete at least 36 hours of course work, including the following 18 hours of required courses: 101, 110L, 281, 371, 471, and 481L. For the remaining 18 hours, the student may select among a number of designated courses that provide a concentration in one of the following subfields of sociology: (1) Criminal Justice. Provides background for careers or further training in police, correctional, or legal institutions. (2) Sociology of Latin America. Provides courses helpful to persons interested in business, educational, or diplomatic activities in the Latin American countries. (3) Social Psychology. Courses suitable for later activities in which a general knowledge of social influences on human behavior is essential. (4) Social Welfare. Appropriate for future work in public and private agencies, as preparation for law school, or for graduate study in social work. (5) General Sociology. Especially recommended as preparation for graduate study in sociology and for a broadly balanced understanding of the discipline. Further details are available on each concentration from the Department of Sociology and undergraduate advisers in the Department.

**MINOR STUDY**

At least 18 hours of course work beyond 101, including 110 and either 371 or 471 and including a total of not less than 9 hours of upper-division courses.

**MINOR IN SOCIAL WELFARE**

A minor in social welfare consists of at least 18 semester hours of courses in the social welfare curriculum, exclusive of introductory courses in sociology and related disciplines. This minor is especially designed to accompany a major in either sociology or psychology, but may be pursued by students majoring in other fields.

The social welfare minor requires 9 semester hours of the following specialized courses offered by the Department of Sociology: Soc 200, 300, 301. The remaining 9 or more hours of the minor must be selected from the following courses: Soc 213, 216, 230, 310, 312, 313, 414, 488; Psych 230, 270, 271, 320, 331, 332, 373; Anth 308, 315, 345; Econ 331; 341; Pol Sci 410, 421.

Prerequisite requirements attached to the electives listed above must be strictly adhered to by students minoring in social welfare. Finally, courses which are applied toward a major may not be applied toward a minor in social welfare.

**DEPARTMENTAL HONORS**

Superior sophomore or junior students, especially those anticipating graduate study in sociology or interested in research training, are invited to apply for admission to the Undergraduate Honors Program, beginning as early as the junior year. Students participating in this program are eligible to graduate with departmental honors if recommended by the faculty on the basis of outstanding performance.

Students enrolled in the honors program are expected to take at least 6 hours of honors courses, including 499 (Senior Honors Thesis). See pp. 28 for general requirements for departmental honors.

**100. Social Science. (4)**
An introduction to the Social Science disciplines. Emphasis on intensive skills improvement in communications, reading comprehension, study techniques and logical reasoning which are requied for further study in any of the Social Science disciplines. Course themes may vary by department, but all courses will emphasize skills. For students who score 13 or below in Social Science on the ACT or who are admitted with a Social Science deficiency.

**101. Introduction to Sociology. (3)** McNamara, Merkx, Tomasson
Basic concepts, topics, and theories of contemporary sociology.
Prerequisite for more advanced courses in sociology.

**110L. Introduction to Sociological Inquiry. (3)** St. George, Woodhouse
Basic research tools and methods of sociology. Skills in use of library resources, the computer, and principal modes of data collection. Students must pass an elementary skills examination, given on first day of class, or enroll in a one-hour noncredit laboratory.

**150. Introduction to Latin America. (3)**
(Also offered as Lat Am St 150.) This is an interdisciplinary introduction to the geography, culture, literature, society, politics, history, and international relations of the region. A two-hour lecture by faculty members from different departments will be followed by a one-hour discussion section each week.

**200. Foundations of Social Welfare. (3)** Coughlin, Tomasson
Historical development of social welfare institutions and the welfare state; social indicators and the quality of life.
Prerequisite: 101.

**211. Social Problems: Selected Topics. (3)‡**
Sociological approaches to selected social problems.
Prerequisite: 101. May not be repeated for credit toward a major or minor.

**213. Deviant Behavior. (3)** Bogart, LaFree, May
Theory and research on deviant behavior; types of individual and subcultural deviance.
Prerequisite: 101. {Fall, Spring}

**216. Race and Cultural Relations. (3)** McNamara, May
Historical, comparative, and social psychological study of race and ethnic relations in the United States and elsewhere.
Prerequisite: 101.

**221. Sociology of Rich and Poor Nations. (3)** Valdes
Patterns of development and change in nation-states; relationships between Third World and industrial nations; the impact of class conflict, war, revolution, reform, and colonialism on national development.
Prerequisite: 101.

**225. Structure and Functions of the Family. (3)** Meier
Functional analysis of marriage and family institutions in varying societal contexts; alternative patterns of family role organization and interconnections with social structures of wider social systems.
Prerequisite: 101.

**230. Society and Personality. (3)** Bogart
The social psychology of personalities, relationships, small groups, and organizations.
Prerequisite: 101.

**250. Latin America Through Film. (3)** Merkx, Remmer, Valdes
Also offered as Pol Sci and Lat Am St 250.) Interdisciplinary introduction to Latin American studies through documentary films, lectures, reading, and discussion.
Prerequisite: 101 {Spring}

**260. Introduction to Probability and Statistics. (3)**
Also offered as Math 102, Psych 201.) Recommended reparation for 481L. Introduction to basic principles of tatistical treatment of numerical data; basic ideas of probbility, sampling, and statistical inference.
Prerequisite: knowledge of algebra. {Fall, Spring}

**281. Sociological Data Analysis. (3)** Coughlin, May, St. George
Prerequisite to 481L. Problems in the treatment and analysis of quantitative sociological data, including selected statistical applications and computer utilization.
Prerequisites: 101 and 110.

**300. Social Welfare: Policies and Programs. (3)** Coughlin, Tomasson
Examination of the American social welfare system at federal, state and local levels; the social programs of developed and developing societies.
Prerequisite: 200.

**A 301. Social Welfare: Selected Topics for Intensive Study. (3)‡** Coughlin, Tomasson
Exploration of specific issues in social welfare and equality, designed to provide in-depth exposure to current research; topics for each semester to be announced in advance. May not be repeated as credit toward the major or minor.
Pre- or corequisite: 300.

**303. Sociology of Political Behavior. (3)**
Social factors associated with various types of political participation; effects of major social economic, and demographic changes on political forms; impact of classical theorists. Emphasis on empirical research literature.
Prerequisites: 101 and 110.

**308. Sociology of Sex Roles. (3)**
Cross-cultural analysis of sex roles; sex role differentiation, socialization, and stereotyping.
Prerequisite: 101.

**310. Sociology of Aging. (3)**
Descriptive and theoretical study of the social situation of older persons in contemporary industrial societies; the impact on societal institutions of an increasing percentage of older citizens.
Prerequisite: 101; recommended: 110.

***312. Juvenile Delinquency. (3)** David, LaFree, Steele
The causes and nature of juvenile delinquency; its prediction, prevention, and control.
Prerequisite: 101; recommended additional preparation: 213.

***313. Criminology. (3)** David, LaFree, Steele
The sociological dimensions of crime, types of criminal behavior, explanations of crime.
Prerequisites: 101 and 110; recommended: 213. {Fall, Spring}

**315. Social Stratification. (3)** Meier
Structure and dynamics of class, status, and power in society; social consequences of stratification.
Prerequisite: 101.

***321. Sociology of Medical Practice. (3)** Coughlin
Medical care settings with special attention to professional roles of medical practitioners and the role of the patient.
Prerequisite: 101.

**326. Sociology of New Mexico. (3)** (326S. Sociologia de Nuevo Mexico.) Valdes
New Mexico as a social system; the infrastructure of communities and ethnic groups, stratification, major social institutions, deviance and inter-group relations.
Prerequisite: 101.

***331. Collective Behavior. (3)**
Collective activity in response to social stresses; social behavior in the forms of panics, crazes, hostile outbursts, and social movements.
Prerequisite: 101.

**335. Sociology of Mass Communication. (3)**
(Also offered as Sp Com 335.) Mass communication in society with emphasis on Western industrial societies, impact of mass communication on social movements and on sectors of the social structure; social psychology of mass communications.
Prerequisites: 101 and 110.

***338. The City in History. (3)** Roebuck
(Also offered as Arch and Hist 338.) Development of urban forms through history, with special emphasis on the modern era; causes of urban growth and change; impact of cities on the development of Western society.
Prerequisite: 101.

**345. Sociology of Youth. (3)** McNamara, Meier
Youth in varying social contexts. Intergenerational problems, role transitions, youth subcultures, and the relationships of youth to major social institutions.
Prerequisites: 101 and 110.

**350. Rural Society in Latin America. (3)** Valdes
Analysis of agricultural modes of production—including the relationship of crop, tenancy and land ownership patterns and social institutions stemming from them, from Spanish colonial times to the present. Effects of the commercial revolution and agrarian reforms.
Prerequisites: 101 or 6 hrs. in courses related to Latin America.

***351. The Urban Community. (3)** McNamara
The forms and development of urban community; demographic, spatial, functional, and temporal patterns; metropolitan development and city-hinterland relations.
Prerequisites: 101 and 110.

***355. Governments and Politics of Latin America I. (3)** (Also offered as Lat Am St, Pol Sci 355.) The political dynamics of the Latin American republics, considered on a country-by-country basis. Recommended preparation: Hist 282.

***361. Social Implications of Technological Change. (3)**
The impact of technological change on societal institutions with special attention to underdeveloped societies.
Prerequisite: 101.

**371. History of Social Thought. (3)** Huaco, Woodhouse
The rise of sociology as a scientific discipline, principally during the nineteenth century; special attention to the contributions of Comte, Marx, Durkheim, Tonnies, Simmel, and Weber.
Prerequisites: 101 and 110. {Fall, Spring}

***389-390. Latin American Philosophy. (3, 3)**
(Also offered as Hist and Phil 389-390.) 389—pre-Columbian thought through Independence ideologies. 390—positivism through contemporary thought.

**399. Sociology Honors Seminar. (3)**
Restricted to students admitted to departmental honors program. {Offered upon demand}

***413. Criminal Justice. (3)** LaFree, Steele
The system of criminal justice and social control. Organization and decision processes involved in detection, arrest, prosecution, adjudication, sentencing, and other subsystems of criminal justice. Issues of evaluation and planning.
Prerequisite: 312 or 313.

***414. Sociology of Corrections. (3)** David, LaFree, Steele
The police, courts, prisons, probation and parole; recent developments in the control of crime.
Prerequisite: 312 or 313.

***416. Sociology of Legal Systems. (3)** David
Various perspectives in relation to law and social structure. Emphasis on the normative perspective of law, the natural law perspectives and the sociology of law in historical and present developments. Comparison of Western and non-Western legal systems.
Prerequisites: 213, 312, 313, 414.

**421. Sociology of Education. (3)** Bachelor
(Also offered as Ed Fdn 421.) Structure and functioning of educational institutions in the United States and other societies.
Prerequisite: 101.

***422. Sociology of Religion. (3)** McNamara
Structure and functioning of religious institutions in Western and non-Western societies.
Prerequisite: 101 or 110.

***424. Sociology of the Western Occult Tradition. (3)** Huaco
Examines the Western occult tradition as heretical mysticism and as a set of techniques for personal growth. As mysticism, occultism will be analyzed as ideology, as a response to fear and insecurity, and as an expression of transcendance.
No prerequisites.

***430. Sociology of Myth and World Views. (3)** Huaco
The social bases of ideology; ideological phenomena as distortions of social reality; isomorphism in social and cultural patterns; social causation of ideology. Theories of myth. Freudian, Jungian and structuralist approaches. Relations between ideology and myth.
No prerequisites.

***435. Small Group Analysis. (3)** Bogart
Behavioral dynamics and emergent social structures in small groups and interpersonal networks; the interplay of informal and institutionalized patterns of social relationships.
Prerequisites: 101 and 110.

***438. Concepts of Social Psychology. (3)** Bogart
Concepts from sociologists who specialize in social psychology, including symbolic interaction, labeling theory, exchange theory and others. Comparison of sociological and psychological perspectives.
Prerequisite: 230.

***439. Proseminar in Social Psychology Research. (3)**
Critical analysis of current research publications in social psychology. Designing of publishable research projects.
Prerequisite: 281.

***441. Formal Organizations. (3)** Bogart
Structure and functional dynamics of formal organizations; the role of bureaucracy in modern social organization.
Prerequisites: 101 and 110.

***445. Occupations and Professions. (3)** Woodhouse
Comparative studies of occupational subcultures; patterns of interaction and social norms in relations among colleagues and with clients; recruitment, mobility, and the process of professionalization.
Prerequisites: 101 and 110.

***450. Urban Society in Latin America. (3)** Valdes
Causes, processes and consequences of urbanization from Spanish colonial times to present; changes in class, status, power, population growth and social relations in urban society.
Prerequisite: 350.

***451. Population. (3)** May, Tomasson
The composition of populations; fertility, mortality, migration; sources and evaluation of demographic data.
Prerequisites: 101 and 110.

***461. Social Change. (3)** Meier, Woodhouse
Conditions and processes producing new social structures; emergence of new values and norms; reform movements, political revolution, and cultural diffusion; theories of social change.
Prerequisites: 101 and 110.

***465. Philosophy of History. (3)**
(Also offered as Phil 465.) Examination of the structure, methods, and presuppositions of social sciences.

**471. Contemporary Sociological Theory. (3)** Huaco, Merkx
Comparative analysis of major contributions to sociological theory since 1900, considering their continuity with older theortical positions and applications in contemporary research.
Prerequisites: 101 and 110. {Fall, Spring}

***478. Seminar in International Studies. (3)** Slavin
(Also offered as Econ, Geog, M&CL, and Pol Sci 478.) Designed to provide seniors from several disciplines an opportunity to apply an international perspective to their undergraduate training. Each student presents a term project drawing upon his major disciplinary background and related to international concerns. Open only to seniors. {Fall}

***480. Intermediate Statistics for Social Research. (3)** St. George
Prerequisite for 581. Foundations of statistical inference with emphasis on social science applications; distribution theory, estimation, hypothesis testing, measures of association, multivariate techniques.
Prerequisite: 280 (Math 102) or equivalent or permission of instructor.

****481L. Research Methods in Sociology. (4)** St. George, Steele
Use of the computer as a tool of social research; utilization of data archives; problems of research design, instrumentation, and analysis of empirical data.
Prerequisite: 281 for sociology majors; for non-majors, a basic knowledge of elementary statistics or permission of instructor. {Fall, Spring}

***484. The Cuban Revolution, 1959 to Present. (3)** Valdes
(Also offered as Hist 484.) Background to revolution since 1898; emphasis on period since 1959.

**488. Seminar in Field Observation and Experience. (4)** Coughlin
An internship arrangement for students in the social welfare concentration. Participant observation in local agencies and sociological analysis of this experience.
Prerequisites: all "core" courses in the social welfare concentration, and consent of instructor.

**490. Directed Study. (1-3, maximum 6)‡**
Tutorial arrangement with a member of the sociology faculty. Restricted to students with substantial background in sociology. May be taken for departmental honors with prior approval of chairperson.

**499. Senior Honors Thesis. (3)**
For departmental honors students only. By arrangement with department Honors and Awards Committee and approval of the chairperson.

***500. Classical Sociology Theory. (3)**
Prerequisite: 371 or equivalent, as determined by instructor.

***502. Seminar: Social Systems Analysis. (3)** Bogart

***503. Political Sociology. (3)** Merkx

***504. Deviance. (3)** David, LaFree, Steele
Prerequisite: 312, 313, or 414.

***505. Complex Organization. (3)** Bogart

***506. Seminar: Comparing Nations. (3)** Merkx, Tomasson

***507. Sociological Theory: Selected Topics. (3)** Staff

***508. Seminar: Comparative Latin American Social Systems. (3)** Merkx, Valdes
Prerequisite: 450 or permission of instructor.

***510. Social and Political Movements. (3)**

***511. Proseminar in Sociology. (3)** Staff
Required of all sociology graduate students and normally taken in the first semester of graduate work. {Fall}

***512. Sociology of Knowledge. (3)** Huaco

***513. Survey of Contemporary Schools of Sociological Theory I. (1)** Huaco

***514. Survey of Contemporary Schools of Sociological Theory II. (3)** Huaco
(Also offered as Phil 514.)

***515. Sociology of Law. (3)** David, LaFree
Prerequisite: 312, 313, 413, or 414.

***516. Social Control Institutions. (3)** Staff

***517. Criminology and Delinquency. (3)** LaFree, Steele

***518. Social Thought in Latin America. (3)** Valdes

***519. Sociology of Latin American Legal Systems. (3)** David

***520. Racial and Ethnic Relations. (3)** McNamara
Prerequisite: 216 or equivalent.

***521. Sociology of Education. (3)** Bachelor
(Also offered as Ed Fdn 581.)

***522. Sociology of the Family. (3)** St. George

***524. Theories of Social Stratification. (3)** Meier

***525. Proseminar on Latin American Politics. (3)**
(Also offered as Lat Am St, Pol Sci 525.) Previous work in the field is highly desirable and reading knowledge of Spanish is required. {Fall}

***526. Small Group Research. (3)** Bogart

***529. Social and Cultural Change. (3)** Staff

***530. Occupations and Professions. (3)** Woodhouse

***531. Sociology Teaching Practicum. (1)**
For teaching assistants only.

***532. Sociology of Religion. (3)** McNamara

***535. Theories of Social Psychology. (3)**

***545. [528.]Sociology of Mass Communication. (3)** DeFleur
(Also offered as Sp Com 545.)

***551-552. Problems. (2-3, 2-3 hrs. each semester)** Tutorial arrangement with member of the graduate faculty. {Fall, Spring}

***570. Sociological Research: Special Topics. (3)** St. George

***580. Methods of Social Research I. (3)** St. George
Prerequisite: 481L or equivalent. {Spring}

***581. Methods of Social Research II. (3)** LaFree, St. George, Steele
Prerequisite: 480 or equivalent, or permission of instructor. {Offered upon demand}

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America. (3)** Lieuwen, Merkx, Needler
(Also offered as Econ, Hist, Pol Sci 584.)

***588. Seminar in Field Observation and Experience. (1-**
Staff

***595. Special Topics in Sociology. (3)** Staff

***599. Master's Thesis. (1-6 hrs. per semester)**
See Graduate Programs Bulletin for total credit requirements. {Fall, Spring}

***699. Dissertation. (3-12)**

# SPEECH COMMUNICATION

Kenneth Frandsen, Chairperson
1801 Roma NE #123, 277-5305

**PROFESSORS:**
Kenneth Frandsen, Ph.D., Ohio University
Lawrence B. Rosenfeld, Ph.D., Pennsylvania State University

**ASSOCIATE PROFESSORS:**
Jean M. Civikly, Ph.D., Florida State University
Richard Jensen, Ph.D., Indiana University
Estelle M. Zannes, Ph.D., Case Western Reserve University

**ASSISTANT PROFESSORS:**
Gregory Andriate, Ed.D., West Virgina University
Thomas D. Daniels, Ph.D., Ohio University
Allen Lichtenstein, Ph.D., Florida State University
Janice Schuetz, Ph.D., University of Colorado
Barry Spiker, Ph.D., Ohio University
other faculty to be appointed.

**MAJOR STUDY**

36 credits in departmental courses, including 101 or 10
21 credits must be 300-400 level courses. Majors shou
minor in other departments of the College of Arts a
Sciences or departments of other colleges in the Universi
such as Fine Arts, Anderson School of Management,
Education. A distributed minor is available; consult t
Chairperson of Speech Communication for advice on sp
cific course patterns.

Advising sequences for courses of study leading to caree
in teaching; interpersonal communication and the helpi
professions; law, government, and public affairs; organiz
tional communication and management; public relatio
and public information; and telemediated communicati
and broadcasting are available from the Department. T
Department recommends that students take a course fr
each of the following areas: interpersonal, organization
rhetorical, and telemediated communication.

The University offers a multidisciplinary program of studi
concerning the media of mass communication. Course
ferings in Speech Communication coordinate with offerin
in the Departments of Journalism, Theatre Arts and otl
departments.

**MINOR STUDY**

18 credits in departmental courses, including 101 or 1
12 credits must be 300-400 level courses.

**DEPARTMENTAL HONORS PROGRAM**

Guidelines for completing an honors sequence to gradu
with departmental honors are available from the Departme

**101. Introduction to Speech Communication. (3)**
A scientific approach to the principles and concepts
communicative behavior. A nonperformance course. {F
Spring}

**102. Introduction to Speech Communication. (3)**
An analytical approach to the principles and concepts
communication. A nonperformance course. {Fall, Spring

**110. The Evolution of Television. (3)**
(Also offered as Jour and TA 110.) Development of tel
sion in the areas of news, performing arts, ethics, tas
technology, and as industry. Social, cultural, and polit
impact of television on contemporary America, west
civilization, and the world. {Fall, Spring}

**111.Technical Intro to Television. (3)**
(Also offered as Journ and T.A. 111.) A technical introd
tion to the operation of the television equipment enco
tered on this campus and, to the degree possible,
commercial operation. Culminates in demonstration tape
Prerequisite or Corequisite: TA/Sp Com/Journ 110.

**30L. Public Speaking. (3)**
nalysis, preparation and presentation of speeches. A performance course. 1 hr. lecture, 2 hrs. lab. {Summer, Fall, pring}

**32. Parliamentary Procedure. (1)**
tudy and practice of the rules governing the proceedings f groups and deliberating assemblies.

**21. Interpersonal Communication. (3)**
nalysis and practice of communication variables in interersonal relations and settings.

**25. Problem Solving Groups. (3)**
nalysis and application of creative and communicative bilities to solving problems in groups. {Fall, Spring}

**32. Advanced Public Speaking. (3)**
nalysis, preparation, and presentation of specialized forms f public speeches.
rerequisite: 130 or permission of instructor.

**40. Communication in Organizations. (3)**
eview of current literature concerning the relationships nong interpersonal communication, organizational behavr, organizational communication networks, and human sources.

**52. Introduction to Linguistic Analysis. (3)**
See Ling 292.)

**50. Oral Interpretation. (3)**
nalysis and presentation of written materials.

**52. Speaking for Radio/Television. (3)**
ocal performance and message preparation skills related the audio component of the mass media. Emphasis on ndamentals of prepared, extemporaneous and interpretave speaking for television and radio. {Fall}

**58. [261.]Introduction to Mass Communication Effects. elecommunication.)(3)**
urvey of structure, impact, and effects of mass media essages. Analysis of personal and social media environent. Attention to print media and elements of popular ulture.

**70L. Communication for Teachers. (3)**
eory and practice of communication principles and stratlies adapted to the special needs of classroom teachers. lecture, 2 hrs. lab. {Fall, Spring}

**75. Forensics. (1 per semester, to a maximum of 4)**
rticipation in intercollegiate debate or individual speaking ents, campus and community activities. **Offered on /NC basis only.** {Fall, Spring}

**80. Scientific Bases of Speech. (3)**
lso offered as Com Dis 280.) The basis of the speech ocess as presented in the scientific materials of such lated fields as physics, physiology, psychology, and linistics. {Fall, Spring}

**83. English Phonetics. (3)**
lso offered as Com Dis and Ling 303.) Study of speech unds, especially English, and application to teaching eech and English and to speech and language remediaon, especially with problems of articulation, pronunciaon, rhythm, and dialects. {Fall, Spring}

**91. Problems of Interpersonal Communication. (3)**
alysis of communication difficulties in dyadic and small oup relationships.

**93. Nonverbal Communication. (3)**
eory, analysis and practice of a variety of nonverbal essages, including body movement and appearance, vo- cues, and environmental cues.

**95. Intercultural Communication. (3)**
eory, analysis and practice of communication across cul- al and national boundaries, with emphasis on Anglo, ick, Chicano and Native American cultures.

**97. Persuasive Communication. (3)**
alysis, practice and evaluation of principles of attitude ange for a variety of interpersonal and public communi- on situations.

**01. Argumentation. (3)**
amines historical and contemporary theories of argumen- ion. Emphasis placed on development of effective advoy and criticism of arguments.

**02. Southwest Rhetoric. (3)**
idy of the rhetorical tactics used by speakers and groups the Southwest.

**334. Campaigns and Movements. (3)**
Study of rhetorical tactics used by speakers and groups in political campaigns and social movements.

**335. Sociology of Mass Communication. (3)**
(Also offered as Soc 335.) Mass communication in society with emphasis in Western industrial societies, impact of mass communication on social movements and on sectors of the social structure; social psychology of mass communications.
Prerequisites: Soc 101 and 110.

**336. Rhetoric of Dissent. (3)**
Study of the rhetoric of agitators, demagogues, and representatives of the establishment, including analysis of the rhetoric of controversial issues.

**338. Rhetorical Criticism. (3)**
Survey of the types of criticism used to analyze rhetorical messages.

**348. Communication Audit. (3)**
Philosophy, methods, and designs for studying the communication system of and practices in a complex organization.
Prerequisite: 240 or permission of instructor.

**350. General Semantics. (3)**
Influence of perceptions and language habits on evaluations, decisions, and interpersonal relations.

**359. Language and Culture. (3)**
(See Anth 359.)

**360. Advanced Oral Interpretation. (3)**
Theory and techniques involved in the interpretation of prose and drama.
Prerequisite: 260 or permission of instructor.

**362. Mass Communication: Broadcast Station Operations. (3)**
Examination of media production units and outlets from an organizational perspective. Study of the roles of management and administrative personnel, market analysis, and advertising sales. {Spring}

**368. [361.] Mass Media Criticism I. [Telecommunication Evaluation.)(3)**
Critical survey of mediated messages designed to entertain with emphasis on development of analytical and evaluative skills. Methods of analysis are applied to various forms of packaged entertainment, including television programs, contemporary music and the popular press.

**369. Advanced Television Drama Production. (3)**
(See TA 352.)

**375. Advanced Forensics. (1 per semester, to a maximum of 4)**
Intensified study and participation in intercollegiate debate and individual speaking events. **Offered on CR/NC basis only.** {Fall, Spring}

***421. Theories of Communication. (3)**
Critical analysis of contemporary theories, concepts, models, and empirical research relevant to communicative process.

***423. Advanced Nonverbal Communication. (3)**
Analysis and evaluation of theories and research on nonverbal communication.
Prerequisite: 323.

***425. Small Group Communication. (3)**
(Also offered as Ed Fdn 420.) Theory and practice of human interaction in small groups, including role behavior, conflict resolution, nonverbal communication, and phases in group development; special application to the classroom.

***428. Mass Communication Research. [Communication Research.](3)**
Examination of basic principles, methods and techniques of conducting empirical, market and audience research in mass communication.

***431. Rhetorical Theory. (3 per semester, to a maximum of 6)**
Historical survey of major contributors and contributions to the development of contemporary rhetorical theory.

***436. Famous Speeches. (3 per semester, to a maximum of 6)**
Study of speechmaking as a force in political and intellectual history; selected speeches in relation to social, political, and economic issues.

***442. Strategies of Organizational Communication. (3)**
Consulting for planning and implementing a program for improving communication in a complex organization.
Prerequisite: 240 or permission of instructor.

***444. Interviewing. (3)**
Theory and practice of dyadic communication in informational, employment, and decision-making situations.

***449. Communication Practices in Professions. (3)**
Oral reporting, interviewing conflict resolution, power in formal organizations, and group discussions in business, industry, and professional organizations.
Prerequisite: 221 or 240, or permission of instructor.

***452. History of the English Language. (3)**
(See Engl 451.)

***460. Oral Interpretation: Theory and Performance. (3)**
A study of interpretative theory and the oral tradition of literature as they relate to program building and performance.

***463. Current Developments in Mass Communication. (3 per semester, to a maximum of 6)‡**
Intensive study of one area of theory and research in mass communication chosen by the instructor, e.g., rating systems, programming, economics, regulation, social effects. Content varies from semester to semester, may be repeated with different content.

***464. Telemediated Instruction. (3)‡**
Analysis of the values and use of video materials in instructional uses in education, business and industry, and community events.

***467. Mass Communication: International Perspectives. (3)**
Examination of structure and function of broadcasting systems in different countries. Study of agenda setting, information, persuasion, and intercultural contact through mass media. {Spring}

***468. [461.]Mass Media Criticism II. [Telecommunication Strategies.](3)**
Critical survey of mediated messages designed to persuade and inform, with emphasis on developing skills for analysis of such media strategies. Methods of analysis are applied to commercials, political advertisements, news programs, and events of current import.

***470. Speech Communication in the Secondary Schools. (3)**
Survey and development of course content, instructional objectives, and teaching materials for speech communication as an academic subject.

***471. Current Developments in Speech Communication Education. (3)**
Review of recent developments in course content, teaching materials, and instructional strategies; simulated classroom experience with analysis of teaching behavior using media. Required of instructional interns.

***472. Administration of the Forensic Program. (3)**
Problems and methods of directing forensics, managing tournaments, and coaching competitive and noncompetitive activities.

**490. Undergraduate Problems. (1-3 per semester, to a maximum of 6)**
Prerequisite: permission of departmental chairperson. {Summer, Fall, Spring}

**492. Undergraduate Internship. (1-6 per semester, to a maximum of 6)**
Student placement in field assignments for application of speech communication principles and practices in telemediated, instructional, and organizational settings.
Prerequisite: permission of department chairperson. **Offered on CR/NC basis only.** {Summer, Fall, Spring}

**493. Reading and Research in Honors. (3)**
{Summer, Fall, Spring}

**494. Senior Thesis. (3)**
{Summer, Fall, Spring}

***500. Introduction to Graduate Study. (3)**
Required of all graduate students. {Fall}

***521. Seminar: Interpersonal Communication. (3)**

***523. Seminar: Intercultural Communication. (3)**

***527. Seminar: Persuasion. (3)**

***531. Contemporary Rhetoric. (3)**

***534. Seminar: Public Address. (3)**

***535. Seminar: Reasoned Discourse. (3)**

***538. Seminar: Rhetorical Criticism. (3)**

***544. Seminar: Organizational Communication. (3)**

***545.** [528.]**Sociology of Mass Communication.** [Communication Research Methods.]**(3)**
(Also offered as Soc 545.)

***548. Organizational Communication Analysis. (3)**

***550. Seminar: Language Behavior. (3)**

***551-552. Graduate Problems. (1-3, 1-3 hrs. per semester to a maximum of 6)**

***555. Seminar: Educational Linguistics. (1-3)**
(See Ling 555.)

***561. Seminar: Telecommunication Processes and Effects. (3)**

***564. Seminar: Telecommunication Policy and Regulation. (3)**

***570. Seminar: Communication Education. (3)**

***573. Teaching the Basic Course. (1)**

***599. Master's Thesis. (1-6 hrs. per semester)**

# THEATRE ARTS

Brian Hansen, Chairperson
Fine Arts Center 1412, 277-4332

**PROFESSORS:**

Brian Hansen, Ph.D., University of Minnesota
Robert Hartung, M.F.A., Yale University
William Martin, M.F.A., Yale University
Peter Prouse, Ph.D., Northwestern University

**ASSOCIATE PROFESSORS:**

Louis Criss, M.F.A., Columbia University
Ira Jaffe, (Film) Ph.D., University of Southern California
Clayton Karkosh, M.F.A., Yale University
James Linnell, Ph.D., University of California (Berkley)
Jennifer Predock, (Dance Coordinator), B.F.A., University of New Mexico
George Schreiber, M.F.A., Yale University

**ASSISTANT PROFESSORS:**

Allen Baker, Television, Certificate, Royal Academy of Dance, London
Roy Hoglund, M.F.A., University of Washington
John Malolepsy, M.F.A., University of Wisconsin
Denise Schulz, M.F.A., University of Texas
David Velasquez, M.F.A., Carnegie-Mellon

**MAJOR STUDY**

See section under College of Fine Arts

**MINOR STUDIES IN THEATRE ARTS**

24 hours of theatre arts courses which must include TA 120 and 121.

**MINOR STUDY IN DANCE**

a. Required: Dance 122, 222, 250, 263, 368 — 12 hours
b. Electives: 6-12 hours of Dance technique selected with advisement, and, 3-6 hours selected with advisement from Dance 105, 308, 311, 314, 422, 431, 495; Theatre 194, 196, 496. Note: Students majoring in Elementary Education pursuing this minor are required to take 6 hours of Dance 466 in their junior year. — 12 hours

24 hours

**MINOR IN FILM STUDIES**

a. Required: Film 210, 211, 327, 328, 390, 428 — 18 hours
b. Electives: 6 hours from Film 390 and/or 428 either of which may be repeated for credit. — 6 hours

24 hours

**FEES**

Students are reminded that selected theatre, dance and television, and film courses have course fees associated with special supplies and services. These course fees must be paid to the UNM Cashier before the end of the third week of the semester. Refunds will be granted according to the refund schedule in the Student Expenses section of this catalog. Classes subject to this charge bears the notation "course fee required."

## THEATRE

**110. Evolution of Television. (3)**
(Also offered as Journ and Sp Comm 110.) A survey of the history of the theatrical programs and of the social impact of the medium. {Fall, Spring}

**111. Technical Introduction to Television. (3)**
A technical introduction to the operation of television equipment. Culminates in demonstration tape. Course fee required.
Prerequisite: 110. {Spring}

**120. Theatre Foundations I. (3)**
Beginning acting. The development of the actor's natural expression.
Corequisite: 122. {Fall}

**121. Theatre Foundations II. (3)**
Continuation of 120. Emphasis on scene study and personalization.
Prerequisite: 120 Corequisite: 123 {Spring}

**122.** [115.]**Introduction to Theatre.** [Theatre Appreciation.]**(3)**
The nature of theatre art: exploring the aesthetic and practical dimensions of the unified work of the theatre production. Open to non-majors. Course fee required. {Fall}

**123. Introduction to Drama. (3)**
The nature of the staged dramatic work: analysis of plays with representative readings from the history of dramatic literature. Open to non-majors. {Spring}

**151. Artistic Traditions of the Southwest. (3)**
(See Fine Arts 151.) {Fall}

**192. Stagecraft I. (3)**
Basic techniques, tools and materials for construction of stage scenery. Crew assignment on departmental production required. Course fee required. {Fall, Spring}

**193.** [298.]**Stagecraft II.** [Sophomore Practicum II.]**(3)**
Advanced techniques of stagecraft, crew assignment on departmental production required. Course fee required. {Spring}

**194. Costume Crafts I. (3)**
Basic techniques, tools, materials of costume construction. Crew assignment on departmental production required. Course fee required. {Fall, Spring}

**195. Costume Crafts II. (3)**
Advanced techniques of costume crafts. Crew assignment on departmental production required. Course fee required
Prerequisite: T A 194 {Spring}

**196. Introduction to Stage Lighting. (3)**
Basic techniques of stage lighting. Crew assignment on departmental production required. Course fee required. {Fall, Spring}

**198.** [240.]**Stage Makeup.** [Advanced Makeup.]**(3)**
Basic materials and techniques of stage makeup. Crew assignment on department production required. Course fee required. {Fall, Spring}

**214. Television Studio Production. (3)**
The practices and procedures of a television studio and control room. Students will be related through each of the functions essential to broadcasting, and videotaping, a TV program. Course fee required.
Prerequisites: 110, 111. {Fall}

**215. Television Field Production. (3)**
Recording television programs on location. Creation of a ten-minute videotape with a special emphasis on preproduction conceptualization and post-production editing. Course fee required.
Prerequisite: 110, 111. {Spring}

**220. Theatre Foundations III. (4)**
Actor preparation. Developing the physical and emotional craft of the actor through intensive study, preparation and presentation of dramatic materials.
Prerequisite: 121. {Fall}

**221. Theatre Foundation IV. (4)**
Continuation of 220.
Prerequisite: 220. {Spring}

**224.** [165.]**Voice Technique for the Actor I.** [Voice Technique for the Actor.]**(3)**
Instruction for acting students in a method for effective voice production for the stage.
Prerequisite: 121. {Fall}

**225. Voice Technique for the Actor, II. (3)**
Continuation of 224.
Prerequisite: 224. {Spring}

**235. Development of the Modern Theatre. (3)**
Major theories, plays, directors, and productions of the theatre of the Twentieth Century. {Spring}

**267. Acting Study for Non-Majors.** [Acting Skills Tutorial.]**(3)**††
Introduction to the basic craft and experience of acting. {Summer, Fall, Spring}

**290. Professional Theatre Tour. (1-3)**‡
Comprehensive tour of New York or London theatre. Post-trip critique required. {Offered upon demand. January Summer}

**292.** [275.]**Design Skills I.** [Design Skills.]**(3)**
Introduction to basic communication skills of the theatre designer. Emphasis on drafting and drawing. Crew assignment on departmental production required.
Prerequisite: 192. {Fall}

**293. Design Skills II. (3)**
Principles and elements of design as they relate to design processes for the theatre. Crew assignment on departmental production required.
Prerequisite: 292 or permission of the instructor. {Spring}

**294.** [380.]**Costume History.** [Design History.]**(3)**
Survey of design related elements in costume, architecture furniture, and decor in major periods of theatre history. Crew assignment on departmental production required.
Prerequisite: 194. {Fall}

**295.** [381.]**Costume History. (3)**
Continuation of 294. Crew assignment on departmental production required.
Prerequisite: 294. {Spring}

**296.** [358.]**Lighting Methods and Equipment. (3)**
Theory and practice of lighting for the stage. Crew assignment on departmental production required.
Prerequisite: 196. {Fall, Spring}

**297.** [359.]**Theatre Sound and Special Effects. (3)**
Theory and practice of theatre sound design, recording reinforcement; including a survey of special effects techniques. Crew assignment on departmental production required.
Prerequisite: 196. {Spring}

**320. Acting Studio I. (6)**††
Advanced actor training. The creation of a role related to the study of the collaborative process of theatrical art through the preparation and presentation of dramatic materials.
Prerequisite: 221. Permission of department. [Fall]

**321. Acting Studio II. (6)**
Continuation of 320. Advanced actor training with emphasis on laboratory work in the classroom.
Prerequisite: 320. {Spring}

**355. Fundamentals of Playwriting I. (3)**
Introduction to writing for the stage. Submission of a original one-act play or adaptation. {Fall}

**356. Fundamentals of Playwriting II. (3)**
Continuation of 355. Application of the principles of dramatic writing to a full length dramatic work (play, screenplay, teleplay). {Spring}

**360. Arts Management I: Arts Organizations. (3)**
An introduction to the not-for-profit organizational laws and structure including boards of directors, constitutions, by laws, personnel, budgets, fund-raising. Crew assignments on departmental productions required. {Fall}

**361.** [350.]**Theatre Management. (3)**
Introduction to audience development, public relations promotion, box office, subscriptions, house management. Crew assignment on departmental productions required {Fall}

**364. Arts Management Workshop (2)**‡‡
Management assignment within the College of Fine Arts.
Prerequisite or corequisite: 361. {Summer, Fall, Spring}

‡‡ May be repeated twice for credit.

166. [353.]**Stage Management.** [Introduction to Stage Management](3)
The role, functions and duties of the stage manager in production, rehearsal, and performance. Fall, Spring

167.**Acting Skills Laboratory.** [Acting Skills Tutorial.] 1-3)††
Small group and individualized coaching in acting skills. Emphasis on scene study and preparation of dramatic materials for classroom presentation.
Permission of instructor. Summer, Fall, Spring

192. [475.]**Scene Design I.** (3)
Basics of scene design, emphasis on play analysis with series of projects to explore various types of production. Crew assignment on departmental production required.
Prerequisite: 293. {Fall}

193. [476.]**Scene Design II.** (3)
Exploration of designing for various types of stages (proscenium, thrust, arena.) Crew assignment on departmental production required.
Prerequisite: 392. {Spring}

194. [485.]**Costume Design I.** (3)
Introduction to basics of costume design through series of projects emphasizing period and small group relationships. Crew assignment on department production required.
Prerequisite: 294. {Fall}

195. [486.]**Costume Design II.** (3)
Series of projects emphasizing different production styles. Crew assignment on departmental production required.
Prerequisite: 394. {Spring}

196. [458.]**Lighting Design I.** (3)
Basics of lighting design, emphasis on play analysis, light plots, and plugging charts. Crew assignment on departmental production required.
Prerequisite: 296. {Fall}

197. [459.]**Lighting Design II.** (3)
Emphasis on designing for various types of stages. Crew assignment on departmental production required.
Prerequisite: 396. {Spring}

198. **Junior Practicum II.** (2)
{Spring}

199. [323.]**Special Problems in Theatre and Production.** [Technical Workshop II.](2)‡
Intensive study and practice of special techniques and materials in theatre and production.
Permission of instructor. {Offered upon demand}

203. **Fundamentals of Directing I.** (3)
Methods and techniques for the director in planning, rehearsal, and performance. {Summer, Fall}

204. **Fundamentals of Directing II.** (3)
Prerequisite: 403 or equivalent. {Offered upon demand}

241. **Music Theatre Workshop.** [Experimental Music Theatre.](1-4)‡
The content and form of this course will vary each time offered, normally culminating in public performance involving both departments of music and theatre arts. {Offered upon demand}

245. **Educational Theatre.** (3)
Foundations of developmental drama in the schools with emphasis on educational theatre as an integral part of the school curriculum and the student activities program. {Fall}

246. **Planning the Educational Theatre Program.** (3)
Preparation, organization, and operation of both the curricular and extracurricular phases of educational theatre programs in the schools.
Prerequisite: 415 or equivalent. {Spring}

247. **Educational Theatre Workshop.** (3-6)‡
Participation in prearranged workshop production.
Prerequisite: 415 or equivalent. Not to exceed 9 hours without permission of the Committee on Studies. {Offered upon demand}

321. **Acting Studio III.** (6)
Advanced study for the actor through focus on a particular historical period.
Prerequisite: 321, 435, 436. Corequisite: 437. {Fall}

322. **Acting Studio IV.** (6)
Advanced study of the actor through focus on different styles of theatre.
Prerequisite: 420. {Spring}

*428. **Ensemble Improvisation.** (3)‡
Emphasis on the development of original dramatic material out of the process of individual and group improvisation. {Offered upon demand}

*429. **Summer Workshop.** (1-3)‡
{Summer}

*435. **Theatre History I.** (3)
Development of dramatic writing and production techniques from the origin of tragedy in Greece to the religious pageants of the Medieval theatre. {Fall}

*436. **Theatre History II.** (3)
Continuation of 435 from the Renaissance to the Twentieth Century. {Spring}

*437. [337.]**Theatre in Its Cultural Setting.** [Modular Seminar.](3)
An interdisciplinary study of the cultural setting of a play which will be produced in the department's season. A series of lectures bring to the study of the play the expertise of faculty throughout the University. {Fall}

*455. **Seminar in Playwriting.** (3)
Emphasis upon analysis of student-written plays.
Prerequisite: 355 or equivalent. [Fall in alternate years]

*456. **Playwriting Laboratory.** (3)‡
Offered to provide playwriting students opportunities to work in response to the enactment of their developing playscripts.
Prerequisite: 455 or equivalent. {Spring in alternate years}

460. **Arts Management Internship.** (1-6)
Internship with a major arts organization outside the structure of the University. Minimum of 1 semester UNM residence required after internship before degree will be granted. {Offered upon demand}

491. **Professional Apprenticeship.** (1-6)†
Qualified students accepted by a professional company (e.g., The Santa Fe Opera) may be registered for credit in technical production or in acting apprenticeship.
Prerequisite: average of 3.0 or better in theatre arts courses. {Summer, Fall, Spring}

492. **Advanced Scene Design.** [Design Seminar.](3)
Projects emphasizing large multi-set production (Shakespeare, musical, operas, ballets). Preparation of design portfolio. Crew assignment on department production required.
Prerequisite: 393. {Fall}

494. **Advanced Costume Design.** (3)
Projects emphasizing large cast productions. Preparation of design portfolio. Crew assignment on departmental productions required.
Prerequisite: 395 or permission of instructor. {Fall}

495. **Studies in Theatre.** (1-3)‡

496. **Student Production Project.** (1-3)†
{Summer, Fall, Spring}

497. **Independent Study.** (2-3)†
{Fall, Spring}

498. **Senior Practicum.** (2)
{Summmer, Fall, Spring}

499. **Senior Thesis.** (3-6)
{Fall, Spring}

*500. **Dramatic Theory and Critical Analysis.** (3)
{Fall}

*509. **Graduate Internship.** (3-6)‡

*510. **Internship in Educational Theatre.** (3-9)

*529. [550.]**Advanced Topics in Theatre.** (1-3)‡

*551-552. [590.]**Problems.** [Individual Problems.](1-3, 1-3)

*596. **Student Production Project.** (1-3)†
{Fall, Spring}

*597. **Independent Study.** (2-3)†
{Fall, Spring}

*599. **Master's Thesis.**(1-6 per semester)

# DANCE

105. **Dance Appreciation.** (3)‡
An introductory study of dance as spectacle, technique and ritual for today's audience. Course fee required. {Summer, Fall, Spring}

108. **Introduction to Dance I.** (2)††
(Also offered as PE 126.) Techniques and practice of basic motor skills and their application to aesthetic communication. {Summer, Fall, Spring}

149. **Introduction to Ballet.** (3)††
Ballet vocabulary and elements of alignment, strengthening, stretching, and rhythm as prerequisite to other technique courses.
Prerequisite: 108 or equivalent. Placement class required for admission to level. Course fee required. {Summer, Fall, Spring}

200. **Accompaniment for Dance.** (2)‡‡
(Also offered as Music 200.) An introduction to the role of the musician in dance accompaniment. Study of the class structures of various dance forms (ballet, ethnic, and contemporary techniques), and the types of rythmic, textural, and dynamic support most suitable to each. Selection of appropriate repertory and development of skills in improvisation. {Offered upon demand}

°210. **Modern Dance I.** (3)‡
Beginning technique of modern dance including the principles of fall and recovery, and contraction and release. Emphasis also on placement, strength building, and improvisation.
Prerequisite: 108 or equivalent. Course fee required. Placement class required for admission to level. {Summer, Fall, Spring}

212. **Improvisation.** [Improvisation and Chance.](2)‡
Exploration of personal movement material and creative impulses.
Prerequisite: permission of instructor. {Offered upon demand}

222. **Rhythmic Fundamentals.** (2)
An introduction of basic metrical patterns involving sound and movement, including breath rhythm and percussion. {Fall, Spring}

°249. **Ballet I.** (3)††
Further development of ballet technique at the barre and in center work.
Prerequisite: 108, 149 or equivalent. Course fee required. Placement class required for admission to level. {Summer, Fall, Spring}

°250. **Movement Analysis.** (3)††
A technique for descibing movement through the concepts of effort and shape harmony. Practical application in discussion and movement exercises. {Offered upon demand}

262. **History of Dance I.** (3)
A broad discussion of dance from tribal culture to the height of Russian ballet in the late 19th century. Course fee required. {Fall}

263. **History of Dance II.** (3)
A study of the origins of modern ballet and modern dance from the late 19th century to the present.
No prerequisite. Course fee required: {Spring}

308. **Studies in Ballet Forms.** (2)‡
Various techniques of ballet training such pas de deux, variation, pointe work, and adagio.
Audition required for placement level. {Summer, Fall, Spring}

°310. **Modern Dance II.** (4)‡
Graham, Limon, and Cunningham based techniques of modern dance are offered in different semesters.
Prerequisite: 210 or equivalent. Placement class required for admission to level. Course fee required. {Summer, Fall, Spring}

°311. **Studies in Forms of Choreography I.** (3)‡
Developing the skills of selecting and editing dance materials for individual and group compositions. Exploration of modern dance or classical forms.
Permission of instructor required. {Offered upon demand}

314. **Kinesiology for Dancers.** (3)††
Structural analysis of movement. Basic understanding of the skeletal and neuromuscular systems of the human body in movement.
Permission of instructor required. {Offered upon demand}

349. **Ballet II.** (4)‡
Intensive study of classical approach to turns, elevation and combinations in space, and musicality. Course fee required. Placement class required for admission to level.
Prerequisite 249 or equivalent. {Summer, Fall, Spring}

**368. Ethnic Dance. (3)‡**
Studies in some of the ethnic forms of dance, including flamenco, East Indian, African, tap and jazz.
Prerequisites: 108 or equivalent, 222 recommended. Placement class required for admission to level. Course fee required. {Summer, Fall, Spring}

**°410. Modern Dance III. (4)‡**
An intensive study of contemporary approaches to turns, elevations, combinations in space and musicality. Course fee required. Placement class required for admission to level.
Prerequisite: 249, 310 or equivalent. {Summer, Fall, Spring}

**°422. Special Problems in Music for Dance.** [Advanced Studies in Rhythm]**(3)‡**
Advanced study in reading and writing of scores.
Prerequisite: 222 or equivalent. {Offered upon demand}

**431. Dance Criticism. (3)‡‡**
Observation and analysis of dance events, emphasis on contemporary theories and performances. Course fee required. {Fall, Spring}

**°449. Ballet III. (4)††**
Prerequisite: 210, 349 or equivalent. Placement class required for admission to level. Course fee required. {Summer, Fall, Spring}

**°451. Exploration Movement. (3)‡‡**
Continuation of 212, with further emphasis on self-awareness, development of non-verbal interpersonal relationships, textures, dynamics, space and time. Creative improvisation combining dance, drama and music. Offered upon demand

**466. Theory and Practice of Teaching Dance. (6)**
(Also offered as PE 366.) Methods and materials for teaching modern dance and ballet with an emphasis on the fundamentals of movement experience and control. Lecture and lab. {Offered upon demand}

**°495. Special Studies in Dance. (1-3)‡**
Permission of instructor required. {Offered upon demand}

# FILM

NOTE: All film courses are cross-listed with Art History by the designation "also offered as". The numbers are the same.

**210. Introduction to Film. (3)**
Survey and critical analysis of the development of the modern picture as an art form. Screening of major films. Course fee required. {Fall}

**211.** [250.]**Film Comedy. (3)**
Forms, modes, and techniques of comedy in film. Course fee required. {Spring}

***326.** [327.]**History of Film I. (3)**
History of the motion picture from its beginnings to the era of sound. Screening and analysis of major films. Course fee requird. {Fall}

***328. History of the Film II. (3)**
History of the motion picture from the advent of sound to the present day. Screening and analysis of major films. Course fee required. {Spring}

**390. Elements of Filmmaking. (3)**
Practicum in basic conceptual and technical aspects of independent filmmaking. Course fee required.
Permission of instructor. {Fall, Spring}

***428.** [427.]**Topics in Film History. (3)‡**
Seminar on main issues and theories in the development of cinematic art. Course fee required.

# WOMEN STUDIES

Ann Nihlen, Coordinator
Marron Hall 233, 277-3854

° Open to graduate students and to undergraduates enrolled in the preprofessional curricula of the College of Fine Arts. Exceptions may be made with the permission of the department chairperson.

‡‡ May be taken three times for credit. Instructor and Committee on Studies must approve additional repitition of this course.

**PROFESSORS:**

Helen M Bannan (American Studies), Ph.D., Syracuse University
Ann Nihlen (Educational Foundation), Ph.D., University of New Mexico
Vera John-Steiner (Educational Foundations), Ph.D., University of Chicago

**ASSOCIATE PROFESSOR:**

Jane E. Abrams (Art), M.F.A., Indiana University

**ASSISTANT PROFESSORS:**

Sandra L. Schwanberg (Nursing), M.S., University of Illinois
Margaret J. Slaughter (History), Ph.D., University of New Mexico

Women studies is an interdisciplinary program whose focus is feminism and women. It is concerned with women's contribution in the past, their present situation, their future possibilities. Major or minor study in women studies is not available; however, the Women Studies Program now offers its own course numbers in additions to cross-listing courses with other departments. Students wishing to concentrate in this field are advised to earn a Bachelor of University Studies degree and to consult with the coordinator concerning their programs. Also, a student may elect to minor in American Studies with an emphasis in women studies (see "American Studies" for details.)

The following courses are representative of Women Studies offerings; additional courses on special topics are frequently scheduled. A complete list is available each semester at the Women Studies office.

**181. Seminar for Returning Women Students. (3)**
(Also offered as Ed Fdn 181.) Designed for women who are entering or returning to school after an interruption; will identify problems associated with re-entry; will review academic skills; will provide an opportunity to begin to define educational needs and issues.

**200.** [299.]**Introduction to Women Studies. (3)**
Focuses on Women's status in society—the myths and realities. Examined are women's socialization by sex, class, race, and culture; the economics of discrimination and role of education and family. {Fall, Spring}

**222. Race, Class and the Feminist Movement. (3)**
A detailed study of how the institutions of racism, class and sexism have effected the growth of the feminist movement. {Fall}

**232. La Mujer Chicana. (3)**
(Also offered as Am St 231.) The purpose of this class will be to introduce and familiarize students with the sociological and political evolution of the Chicana. {Fall}

**233. American Indian Women. (3)**
An interdisciplinary course which focuses on the historical, cultural, economic, and political issues which impinge on the changing role of the American Indian Woman.
No prerequisite. {Spring}

**234. Her Own Voice: Black Women Writers. (3)**
An exploration of the body of work written exclusively by Black Women as well as a multi-disciplined approach to black women's experiences through her own writings, art media.
No prerequisite. {Spring}

**279. Interdisciplinary Topics. (1-3)‡**
Can be repeated for credit three times.
Prerequisites: 200 or permission of instructor. {Fall, Spring}

**324. Contemporary Feminist Theory. (3)**
An investigation of selected feminist theories from the past three decades. Learning the skills of analysis and applying these skills to theory will be stressed.
Prerequisite: 200 or permission of instructor. {Spring}

**331. Third World Women. (3)**
A survey of women in various Third World Countries. Course will focus on particular regions in turn; Asia, Africa, Latin America, the Middle East. Titles of individual sections will vary as regions vary. {Fall}

**335. Heterosexism and the Oppression of Women. (3)**
Descriptive and theoretical focus on the role of heterosexual and homosexual women in the community and within the women's movement.
Prerequisite: 200 or permission of instructor. {Fall}

**339. Women Abuse. (3)**
A comprehensive study of the phenomena of abuse, b subtle and overt, against women. Included will be sex assault, medical malpractice, forced sterilization, dome violence, as well as other kinds of social and cultural abu

**353. Women and Creativity.** [The Creative Process Women.]**(3)**
A study of the creative process linked to the artist's posit in society. A rotation course which will deal successiv with women artists in the visual arts, literature, crafts with the creative process itself.
Prerequisite: 200 or permission of instructor.

**357. Media-Arts and Women. (3)**
(Also offered as Art Education 357.) Will present overv of women in art and media; will survey history ; will s as a workshop for developing skills; will interpret how media influences status of women.
Prerequisite: 200.

**379. Interdisciplinary Topics. (1-3)‡**
Can be repeated for credit three times.
Prerequisites: 200 or permission of instructor. {Fall Spring}

**386. Women in Sports. (3)**
An historical and sociological study of women and spor American culture and an examination of the recent chan in women's athletics.

**392. Senior Seminar. (3)**
An advanced course for seniors in Women Studies. Em sis is on synthesis and development of research skills. Prerequisites: 200, senior standing and permission o structor. {Spring}

**460. Legality of Class Based Discrimination: Histor the 14th Amendment. (3)**
Invesigation of the progress our society has made tow developing a principle of equality which prevents unc treatment of people under the law.
Prerequisite: Pol Sc 300.

**487. Sexism in Education. (3)**
(Also offered as Ed Fdn 487.) Course will focus o historical and sociological analysis of discrimination as as the psychological effects on children and adults. include the development of sex roles, the effects of curr materials and Title IX.
Prerequisites: 200, Ed Fdn 290 or Permission of Instru

**499. Undergraduate Problem. (1-3)‡**
Student is expected to present a topic for study. Ca repeated for credit three times.
Prerequisites: Permission of instructor required before istering. {Fall, Spring}

**Related courses:**

**Amer St 231. Women's Experience in the United St (3)‡**
**Amer St 301-302. Interdepartmental Studies in the ture of the United States. (1-3, 1-3)‡**
American Women Writers.

**Amer St 312. The Black Woman. (3)**

**Amer St 331. Classics of Feminism in the United S (3)**

**Amer St 332. Immigrant Women. (3)‡**

**Amer St 498. Internship. (1-6)**

***Amer St 501. Interdepartmental Seminar in the C of the United States. (3)‡**
Interdisciplinary Feminist Research.

***Anth 341. Biosocial Bases of Sex Roles. (3)**

**Econ 239. Economics of Feminism. (3)**

**Ed Fdn 293. Topics. (1-3)**
History of Women in Education.

**Ed Fdn 384. Women and Self-Education. (3)**

**Ed Fdn 386. Psychological Development of Women.**

**Ed Fdn 486. Psychological Development of Women.**

**Ed Fdn 493. Topics. (1-3)**
Sexism in Education.

**ıgl 280. Readings in Literature. (3)**
llen Women in Literature.
**ıgl 300. Studies in Literature. (3)‡**
omen in Literature.
omen in Asian Literatures.
odern Feminist and Sexist Fiction.
**ıgl 360. Individual Authors. (3)‡**
rginia Woolf.
omen Writers of the South.
e Brontes.
illa Cather.
**ıgl 459. Irish Literature. (3)**
ıage of Irish Women in Literature.
**ıgl 470. Contemporary Literature. (3)‡**
ntemporary Women Poets.
**ngl 488. Special Topics. (3)**
ıages of Victorian Women.
**ngl 580. Special Topics: History of Idea, Literary Movents, etc. (3)**
enthieth-Century Women Writers.

***HPE&R 493. Topics. (1-3)**
Women in Sports.

***Hist 315. History of Women from Ancient Times to the Enlightenment. (3)**

***Hist 316. Women in the Modern World. (3)**

**Hist 320. Studies in History. (1-3)**
Women in the West.

***Hist 330. History of the Women's Rights Movement. (3)**

***Hist 554. Seminar and Studies in Women's History. (3)**

**H Ec 293. Topics. (1-3)‡**
Maternal and Infant Nutrition.

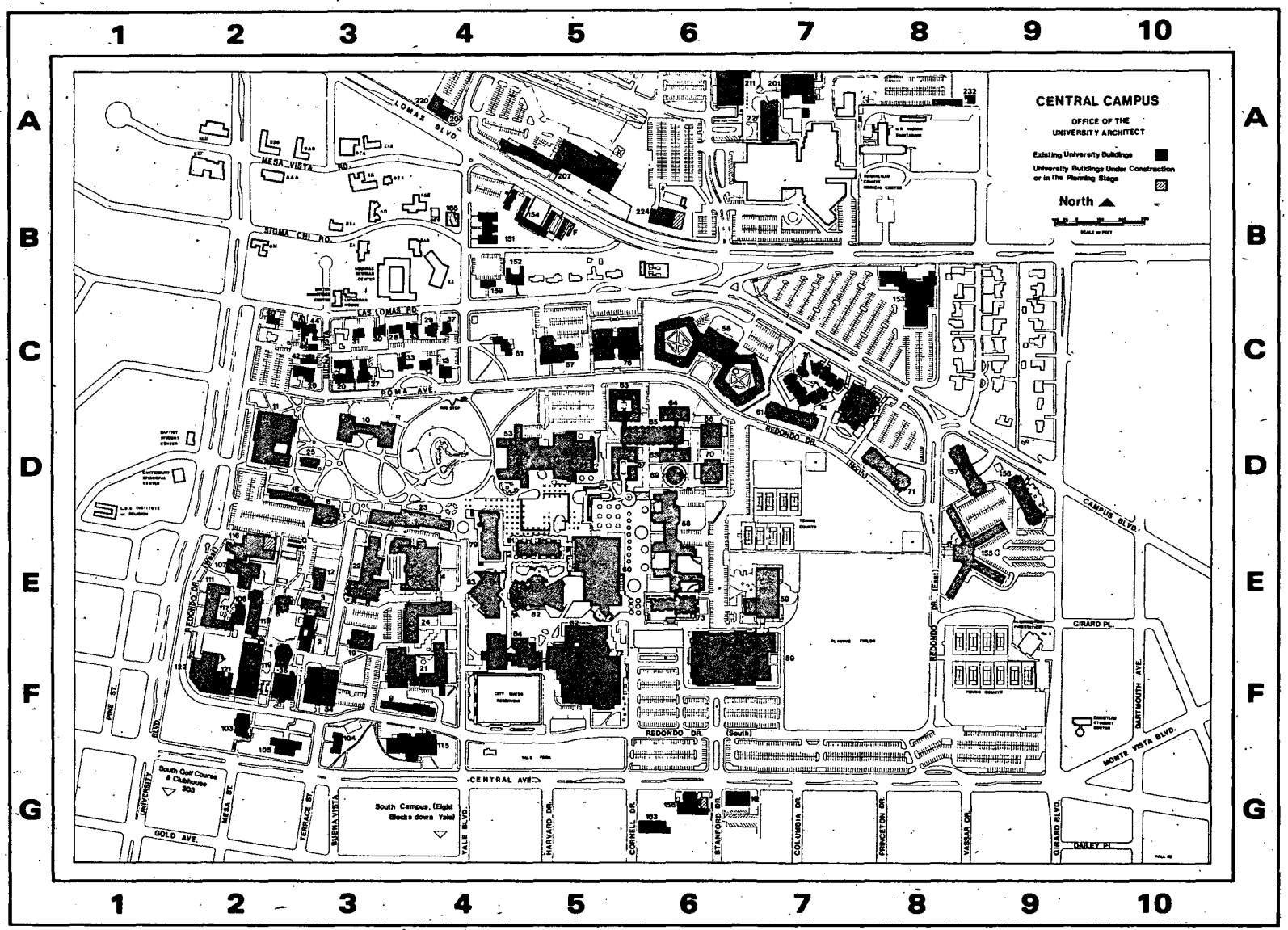
**H Ec 493. Topics (1-3)‡**
Maternal and Infant Nutritions.

**Nurs 307. Problems in Nursing: Selected Topics. (3)**
Women and Health Care.

***Pol Sci 300. Political Topics. (3)‡**
Women and the Law—Public Sphere.
Women and the Law—Private Sphere.
Women and Politics.

**Pol Sci 420. Undergraduate Seminar. (3)**
Sex and Politics.

***Pol Sci 521 Research Seminar in Comparative Government and Politics. (3)**
Sex and Politics.




## Central Campus Legend of Buildings

(Numerical Listing)

(The first number listed matches map numbering, the letter-number combination designates location by map coordinates.)

2. Art Department Crafts Annex ..... B-5
3. Parsons Hall ..... E-3
4. Carlisle Gym ..... E-4
5. Bookstore ..... E-5
6. Bandelier East ..... D-3
8. Marron Hall ..... F-3
10. Administration (Scholes Hall) ..... D-3
11. Anthropology ..... D-2
12. Anthropology Annex ..... E-3
13. Police and Parking Services (1821 Roma NE) ..... C-4
14. Afro-American Studies ..... D-2
16. Bandelier West ..... D-2
19. Biology Annex ..... E-3
20. Speech Communication ..... C-3
21. Biology (Castetter Hall) ..... F-4
22. Chemistry (Clark Hall) ..... E-3
23. Mitchell Hall (Classrooms) ..... D-3
24. Geology (Northrop Hall) ..... E-4
25. Alumni Memorial Chapel ..... D-3
26. Personnel (1717 Roma NE) ..... C-3
27. Faculty Club (1805 Roma NE) ..... C-3
28. Native-American Studies ..... C-4
29. Photo Service ..... C-4
30. International Center ..... C-3
31. Public Information ..... C-3
33. Chicano Student Services ..... C-4
34. Psychology ..... F-3
35. Regener Hall (Physics) ..... F-2
37. Woman's Center ..... C-4
40. 1700 Las Lomas NE ..... C-2
41. Credit Union ..... C-3
42. Purchasing (609 Buena Vista NE) ..... C-3
43. 1816 Las Lomas NE ..... C-3
44. 1716 Las Lomas NE ..... C-3
45. 613 Buena Vista NE ..... C-3
51. President's Home ..... C-4
53. Zimmerman Library ..... D-5
56. Mesa Vista Hall (Departmental Offices) ..... E-6
57. 1915 Roma NE ..... C-3
58. Hokona Hall (Dormitory) ..... C-6
59. Johnson Gymnasium ..... F-6
60. New Mexico Union ..... E-5
61. Santa Clara Hall (Dormitory) ..... C-7
62. Fine Arts Center ..... F-5
63. Education Office Building ..... C-5
64. Industrial Arts ..... C-6
65. Education Administration ..... D-5
66. Home Economics ..... D-6
67. Education Classroom Building ..... D-5
68. Art Education ..... D-6
69. Mimbres ..... D-6
70. Manzanita Center (Educational Laboratory) ..... D-6
71. Santa Ana Hall (Dormitory) ..... D-8
72. Popejoy Hall ..... F-5
73. Student Health Center--University College ..... E-6
74. Laguna Hall (Dormitory) ..... C-7
75. DeVargas Hall (Dormitory) ..... C-7
76. Anderson School of Management ..... C-5
77. La Posada (Dining Hall) ..... C-8
79. Ortega Hall (offices and classrooms) ..... D-4
81. Humanities Building ..... D-5
82. Woodward Lecture Hall ..... E-5
83. Bookstore ..... B-4
84. Art ..... F-4
103. Hodgin Hall ..... F-2
104. Sara Raynolds Hall ..... F-3
105. Art Annex ..... F-2
106. Civil Engineering Research Laboratory ..... E-2
107. Engineering Annex ..... E-2
111. Chemical & Nuclear Engineering ..... E-2
113. Journalism ..... F-3
116. Ford Utilities Center ..... E-2
117. Civil Engineering (Wagner Hall) ..... E-2
118. Electrical & Computer Engineering (Tapy Hall) ..... E-2
119. Farris Engineering Center ..... F-2
121. Nuclear Engineering Laboratory ..... F-2
122. Nuclear Engineering ..... F-2
151. Naval Science ..... B-4
152. Jonson Gallery ..... B-4
153. Computing Center ..... B-6
154. Aerospace Studies ..... B-5
156. Coronado Hall (Dormitory) ..... E-8
157. Alvarado Hall (Dormitory) ..... D-8
158. Architecture & Planning ..... G-6
159. Aerospace Studies ..... B-4
162. 2500 Central SE ..... G-6
163. Tamarind Institute ..... G-6
165. 801 Yale NE ..... B-4
203. Continuing Education & Community Services ..... A-4
207. Physics-Astronomy ..... A-5

## Central Campus Legend of Buildings

(Alphabetical Listing)

(The parenthetical number matches map numbering, the letter-number combination designates location by map coordinates.)

Administration (Scholes Hall) (10) ..... D-3
Aerospace Studies (159) ..... B-4
Afro-American Studies (14) ..... C-4
Alumni Memorial Chapel (25) ..... D-3
Alvarado Hall (Dormitory) (157) ..... D-8
Anthropology (11) ..... D-2
Anthropology Annex (12) ..... E-3
Architecture & Planning (158) ..... G-6
Art (84) ..... F-4
Art Annex (105) ..... F-2
Art Department Crafts Annex (2) ..... E-3
Art Education (68) ..... D-6
Bandelier West (16) ..... D-2
Bandelier East (8) ..... D-3
Biology (Castetter Hall) (21) ..... F-4
Biology Annex (19) ..... E-3
Bookstore (83) ..... E-4
Carlisle Gym (4) ..... E-4
Chemical & Nuclear Engineering (111) ..... E-2
Chemistry (Clark Hall) (22) ..... E-3
Chicano Student Services (33) ..... C-4
Civil Engineering (Wagner Hall) (117) ..... E-2
Civil Engineering Research Laboratory (106) ..... E-2
Computing Center (153) ..... B-6
Continuing Education & Community Services (203) ..... A-4
Credit Union (41) ..... C-3
Coronado Hall (Dormitory) (155) ..... E-8
DeVargas Hall (Dormitory) (75) ..... C-7
Education Administration (65) ..... D-5
Education Classroom Building (67) ..... D-5
Education Office Building (63) ..... C-5
Electrical & Computer Engineer. (Tapy Hall) (118) ..... E-2
Engineering Annex (107) ..... E-2
Faculty Club (1805 Roma NE) (27) ..... C-3
Farris Engineering Center (119) ..... F-2
Fine Arts Center (62) ..... F-5
Ford Utilities Center (116) ..... E-2
Geology (Northrop Hall) (24) ..... E-4
Hodgin Hall (103) ..... F-2
Hokona Hall (Dormitory) (58) ..... C-6
Home Economics (66) ..... D-6
Humanities Building (81) ..... D-5
Industrial Arts (64) ..... C-6
International Center (30) ..... C-3
Johnson Gymnasium (59) ..... F-6
Jonson Art Gallery (152) ..... B-4
Journalism (115) ..... F-3
Kiva (69) ..... D-6
Laguna Hall (Dormitory) (74) ..... C-7
La Posada (Dining Hall) (77) ..... C-8
Lecture Hall (6) ..... E-2
Library, Zimmerman (53) ..... D-5
Management, Anderson School of (76) ..... C-5
Manzanita Center (Educational Laboratory) (70) ..... D-6
Marron Hall (9) ..... F-3
Mechanical Engineering (122) ..... F-2
Mesa Vista Hall (Departmental Offices) (56) ..... E-6
Mitchell Hall (Classrooms) (23) ..... D-3
Native-American Studies (28) ..... C-3
Naval Science (151) ..... B-4
New Mexico Union (60) ..... E-5
Nuclear Engineering Laboratory (121) ..... F-2
Ofiate Hall (156) ..... D-9
Ortega Hall (offices and classrooms) (79) ..... D-4
Parsons Hall (3) ..... E-3
Personnel (1717 Roma NE) (26) ..... C-3
Photo Service (29) ..... C-4
Physics-Astronomy (207) ..... A-5
Police and Parking Services (1821 Roma NE) (13) ..... C-4
Popejoy Hall (72) ..... F-5
President's Home (51) ..... C-4
Psychology (34) ..... F-3
Public Information (31) ..... C-3
Purchasing (609 Buena Vista NE) (42) ..... C-3
Regener Hall [Physics (35)] ..... F-2
Registration Center (Bandelier-East (8)) ..... D-3
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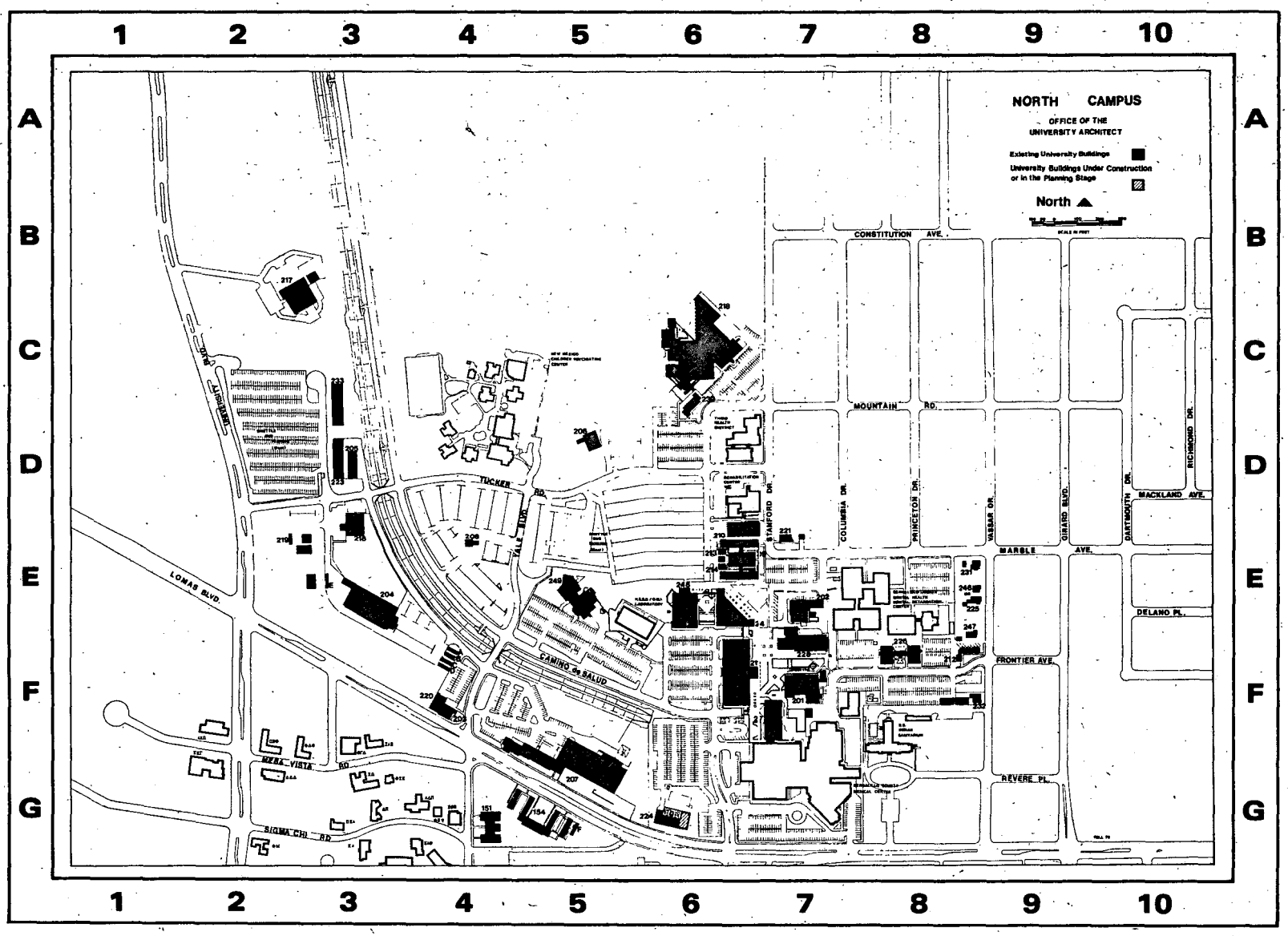
1700 Las Lomas NE (40) ..... C-2
1716 Las Lomas NE (44) ..... C-3
1816 Las Lomas NE (43) ..... C-3
1920 Lomas NE (154) ..... B-5
1805 Roma NE (27) ..... C-3
1915 Roma NE (57) ..... C-5
801 Yale NE (165) ..... B-4




## North Campus Legend of Buildings

(Alphabetical Listing)

(The number listed matches map numbering, the letter-number combination designates location by map coordinates.)



## North Campus Legend of Buildings

(Numerical Listing)

(The first number listed matches map numbering, the letter-number combination designates location by map coordinates.)

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