THE UNIVERSITY OF NEW MEXICO BULLETIN

GENERAL ISSUE

1977-78, 1978-79

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, or national origin. 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 of the basis of race, color, or national origin. 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. The University of New Mexico is also committed to equal opportunity for the physically or mentally handicapped, in compliance with federal regulations.

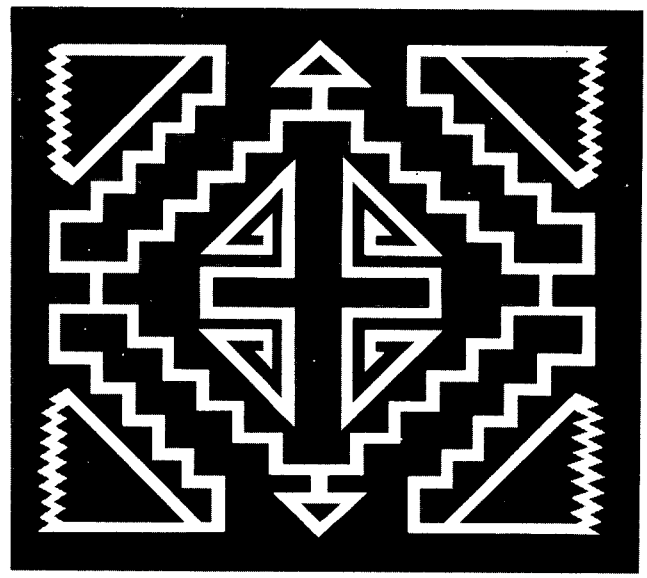
Responsibility for equal employment and educational opportunity throughout the University rests with the President. The President has appointed June Wooliver, Equal Opportunity Officer, and Karen Glaser, Title VI and Title IX Officer, and has assigned responsibility to them for promoting and encouraging progress in meeting the University's equal opportunity goals. All grievances, questions or requests for information relating to student concerns should be referred to Dean Karen Glaser, Mesa Vista Hall 1176, 277-6448. All grievances, questions or requests for information relating to employee concerns should be referred to Dr. June Wooliver, 1806 Roma NE #107, 277-2925 or 277-5063.

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.



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1977-78, 1978-79

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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 School, School of Law, and School of Medicine), CALENDAR, REGISTRATION, ACADEMIC MATTERS ..... Dean of Admissions and Records

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

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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 11:45 and 1:00 to 4:00 Monday through Friday. Administrative offices are open during most of the days of the official student recess periods.

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1977-78 ACADEMIC CALENDAR

1977 SUMMER SESSION **1977**

APPLICATIONS AND CREDENTIALS DUE IN THE ADMISSIONS OFFICE NOT LATER THAN ONE WEEK BEFORE CLASSES BEGIN.

Instruction begins; Late Registration Fee applies..... June 13, Mon.

Late Registration closes; last day for additions to programs of registered students ..... June 17, Fri., 5 p.m.

Undergraduate Program Test Battery ..... To be announced

End of Second Week; $5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option..... June 24, Fri., 5 p.m.

Independence Day, holiday ..... July 4, Mon.

End of Sixth Week; last day for withdrawal from course without college or school approval ..... July 22, Fri., 5 p.m.

Session ends..... Aug. 5, Fri., 10 p.m.

APPLICATIONS AND CREDENTIALS DUE IN THE ADMISSIONS OFFICE NOT LATER THAN ONE WEEK BEFORE CLASSES BEGIN.

NOTE: It may become necessary to close admissions at an earlier date if number of students admitted reaches the maximum that can be accommodated.

1977 FALL SEMESTER **1977**

Instruction begins; Late Registration Fee applies..... Aug. 22, Mon.

Late Registration closes ..... Aug. 26, Fri., 5 p.m.

End of Second Week; last day for additions to programs of registered students ..... Sept. 2, Fri., 5 p.m.

Labor Day, holiday..... Sept. 5, Mon.

End of Fourth Week; $5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option ..... Sept. 16, Fri., 5 p.m.

Homecoming, holiday ..... Oct. 15, Sat.

Midsemester..... Oct. 14, Fri.

Undergraduate Program Test Battery..... Nov. 5, Sat.

End of Twelfth Week; last day for withdrawal from course without college or school approval ..... Nov. 11, Fri., 5 p.m.

Thanksgiving Recess begins ..... Nov. 23, Wed., 10 p.m.

Classes resume..... Nov. 28, Mon., 7:30 a.m.

*Closed Period: ..... Dec. 5, Mon.-Dec. 17, Sat.

*Pre-examination Week ..... Dec. 5, Mon.-Dec. 11, Sun.

*Semester Final Examinations..... Dec. 12, Mon.-Dec. 17, Sat.

Semester ends; last day for removal of Incomplete grade (5 p.m.); Winter Recess begins ..... Dec. 17., Sat., 10 p.m.

APPLICATIONS AND CREDENTIALS DUE IN THE ADMISSIONS OFFICE NOT LATER THAN ONE WEEK BEFORE CLASSES BEGIN.

NOTE: It may become necessary to close admissions at an earlier date if number of students admitted reaches the maximum that can be accommodated.

1978 SPRING SEMESTER **1978**

Instruction begins; Late Registration Fee applies ..... Jan. 16, Mon.

Late Registration closes..... Jan. 20, Fri., 5 p.m.

End of Second Week; last day for additions to programs of registered students ..... Jan. 27, Fri., 5 p.m.

End of Fourth Week; $5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option ..... Feb. 10, Fri., 5 p.m.

Midsemester ..... Mar. 10, Fri.

Spring Recess begins ..... Mar. 11, Sat., 10 p.m.

Classes resume ..... Mar. 20, Mon., 7:30 a.m.

Undergraduate Program Test Battery ..... To be announced

Honors Assembly ..... To be announced

End of Twelfth Week; last day for withdrawal from course without college or school approval ..... Apr. 14, Fri., 5 p.m.

*Closed Period:..... May 1, Mon.-May 13, Sat.

*Pre-examination Week ..... May 1, Mon.-May 7, Sun.

*Semester Final Examinations..... May 8, Mon.-May 13, Sat.

Semester ends; last day for removal of Incomplete grade (5 p.m.); Summer Recess begins..... May 13, Sat., 10 p.m.

Commencement ..... May 14, Sun., 7:30 p.m.

1978-79 ACADEMIC CALENDAR

1978 SUMMER SESSION **1978**

APPLICATIONS AND CREDENTIALS DUE IN THE ADMISSIONS OFFICE NOT LATER THAN ONE WEEK BEFORE CLASSES BEGIN.

Instruction begins; Late Registration Fee applies..... June 12, Mon.

Late Registration closes, last day for additions to programs of registered students ..... June 16, Fri., 5 p.m.

End of Second Week; $5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option..... June 23, Fri., 5 p.m.

Undergraduate Program Test Battery ..... To be announced

Independence Day, holiday..... July 4, Tues.

End of Sixth Week; last day for withdrawal from course without college or school approval ..... July 21, Fri., 5 p.m.

Session ends..... Aug. 4, Fri., 10 p.m.

APPLICATIONS AND CREDENTIALS DUE IN THE ADMISSIONS OFFICE NOT LATER THAN ONE WEEK BEFORE CLASSES BEGIN.

NOTE: It may become necessary to close admissions at an earlier date if number of students admitted reaches the maximum that can be accommodated.

1978 FALL SEMESTER **1978**

Instruction begins; Late Registration Fee applies..... Aug. 21, Mon.

Late Registration closes ..... Aug. 25, Fri., 5 p.m.

End of Second Week; last day for additions to programs of registered students ..... Sept. 1, Fri., 5 p.m.

Labor Day, holiday..... Sept. 4, Mon.

End of Fourth Week; $5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option ..... Sept. 15, Fri., 5 p.m.

Midsemester..... Oct. 13, Fri.

Homecoming, holiday ..... Oct. 21, Sat.

Undergraduate Program Test Battery..... Nov. 4, Sat.

End of Twelfth Week; last day for withdrawal from course without college or school approval ..... Nov. 10, Fri., 5 p.m.

Thanksgiving Recess begins ..... Nov. 22, Wed., 10 p.m.

Classes resume..... Nov. 27, Mon., 7:30 a.m.

*Closed Period: ..... Dec. 4, Mon.-Dec. 16, Sat.

*Pre-examination Week ..... Dec. 4, Mon.-Dec. 10, Sun.

*Semester Final Examinations..... Dec. 11, Mon.-Dec. 16, Sat.

Semester ends; last day for removal of Incomplete grade (5 p.m.); Winter Recess begins..... Dec. 16, Sat., 10 p.m.

APPLICATIONS AND CREDENTIALS DUE IN THE ADMISSIONS OFFICE NOT LATER THAN ONE WEEK BEFORE CLASSES BEGIN.

NOTE: It may become necessary to close admissions at an earlier date if number of students admitted reaches the maximum that can be accommodated.

1979 SPRING SEMESTER **1979**

Instruction begins; Late Registration Fee applies ..... Jan. 15, Mon.

Late Registration closes..... Jan. 19, Fri., 5 p.m.

End of Second Week; last day for additions to programs of registered students ..... Jan. 26, Fri., 5 p.m.

End of Fourth Week; $5 Change of Program Fee applies; last day for withdrawal from course without grade; last day for change in grading option ..... Feb. 9, Fri., 5 p.m.

Midsemester ..... Mar. 9, Fri.

Spring Recess begins ..... Mar. 10, Sat., 10 p.m.

Classes resume ..... Mar. 19, Mon., 7:30 a.m.

Undergraduate Program Test Battery ..... To be announced

Honors Assembly ..... To be announced

End of Twelfth Week; last day for withdrawal from course without college or school approval ..... Apr. 13, Fri., 5 p.m.

*Closed Period:..... Apr. 30, Mon.-May 12, Sat.

*Pre-examination Week..... Apr. 30, Mon.-May 6, Sun.

*Semester Final Examinations..... May 7, Mon.-May 12, Sat.

Semester ends; last day for removal of Incomplete grade (5 p.m.); Summer Recess begins..... May 12, Sat., 10 p.m.

Commencement ..... May 13, Sun., 7:30 p.m.

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

IMPORTANT

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 proper responsibility in connection with them.

GLOSSARY OF COLLEGE TERMS

ACADEMIC YEAR . . . the period which includes Semester I and Semester II. (A separate Summer Session, not part of the Academic Year, is held, with dates as noted in the academic calendar.)

ACCREDITATION . . . the type of recognition held by an educational institution. There are a number of nationally recognized accrediting agencies and associations which are reliable authorities on the quality of training offered by educational institutions. By voluntarily conforming to the standards of excellence set by an agency or association, an institution becomes eligible for inclusion in its accredited or approved list. Regional accrediting associations such as the North Central Association of Colleges and Secondary Schools accredit the institution as a whole; professional agencies such as the Engineering Council for Professional Development are concerned in particular with the standards of the professional schools or programs in their respective fields.

ADMISSION . . . acceptance of an applicant for enrollment.

CLASS . . . the regularly scheduled meeting of an academic course; also a group of students whose graduation date is the same—freshman, sophomore, junior, senior.

CLASSIFICATION . . . the designation used for the student's year of study in terms of his progress toward his chosen degree—freshman, sophomore, junior, senior.

COLLEGE . . . an organizational unit of the University normally offering courses and curricula leading to a particular degree or degrees and supervising the academic progress of students working toward those degrees. The University College supervises all freshman programs but is not a degree-granting college with the exception of the B.U.S. degree program and certain two-year Associate degrees. The degree colleges or schools to which students may transfer, if eligible, after completion of the freshman year are: Architecture and Planning, Arts and Sciences, Business and Administrative Sciences, Education, Engineering, Fine Arts, Nursing, and Pharmacy. The Graduate School, the School of Law, and the School of Medicine offer advanced study.

COURSE . . . a particular subject in which instruction is offered within a given period of time—thus, a course in English.

CREDIT . . . a numerical system for evaluating a student's progress toward a degree, described in terms of semester hours (see definition of semester hours). In order to earn a degree in the normal four-year period, the student will average at least 16 semester hours' credit per semester since the minimum credit required for any bachelor's degree is 124 semester hours.

CURRICULUM . . . a body of courses required for a degree or a diploma or constituting a major field of study.

DEGREE . . . a title bestowed as official recognition for the completion of a curriculum. The bachelor's degree is the first-level degree granted normally upon completion of a four-year course of study in a given field. The master's degree is an advanced degree which requires at least one additional year beyond the bachelor's degree. The doctor's degree, or doctorate, is an advanced degree requiring at least three years beyond the bachelor's degree. The professional degrees of Juris Doctor and Doctor of Medicine require three and four years, respectively, beyond the pre-professional curricula. The University is also granting some two-year undergraduate degrees. The honorary degree is bestowed in recognition of outstanding merit or achievement without reference to the fulfillment of academic course requirements.

DEPARTMENT . . . a division of a college which offers instruction in a particular branch of knowledge, for example, the Department of English.

ELECTIVE . . . a course which the student may study by choice but which may or may not be required for his particular degree.

FISCAL YEAR . . . the period from July 1 through June 30.

GRADUATE STUDENT . . . one who has earned a bachelor's degree and is enrolled for advanced work in the Graduate School.

MAJOR . . . the field of study in which the student chooses to specialize.

MINOR . . . the field of second emphasis. Fewer semester hours' credit are required for a minor than for a major.

NEW STUDENT . . . one who is registering for the first time in The University of New Mexico or for the first time in its Graduate School, its School of Law, or its School of Medicine, or a student transferring from non-degree status in this University.

PREREQUISITE . . . the requirement which must be met before a certain course can be taken.

READMITTED STUDENT . . . one who has previously registered for residence credit in this University but whose attendance has been interrupted by one or more semesters.

REGISTRATION . . . the act of enrolling in classes.

RESIDENT-FOR-TUITION-PURPOSES . . . classification as a resident of the State of New Mexico for purposes of assessing tuition. Determined on the basis of regulations applying to all institutions of higher learning in New Mexico.

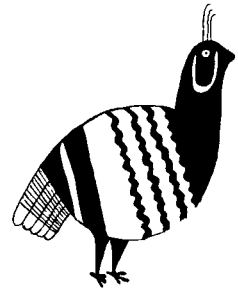
RESIDENT STUDY (OR RESIDENCE WORK) . . . enrollment in courses on the campus or in courses off campus which are allowed by special action to count as residence credit, as distinguished from correspondence or extension credit.

RETURNING STUDENT . . . one who was registered in the immediately preceding session.

SEMESTER . . . an instructional period of 16 weeks. For dates, see Academic Calendars.

SEMESTER HOUR . . . the credit that is allowed for one 50-minute period per week throughout a semester in a lecture class. A course listed for three hours' credit would meet for three periods per week throughout the semester, for example, on Monday, Wednesday, and Friday from 10:30 to 11:20 a.m. Credit for laboratory work, studio, activity physical education, and ensemble music requires more class time per credit hour.

Many other terms are defined within the text of the catalog. Consult the index for page references.



THE REGENTS OF THE UNIVERSITY

THE HONORABLE JERRY APODACA, Governor of New Mexico, ex officio ..... Santa Fe
LEONARD J. DELAYO, State Superintendent of Public Instruction, ex officio ..... Santa Fe
HENRY JARAMILLO, JR., President ..... Belen
MRS. WILLIAM A. JOURDAN, Vice President ..... Hobbs
CALVIN HORN, Secretary-Treasurer ..... Albuquerque
PHILLIP U. MARTINEZ ..... Albuquerque
MRS. GEORGE J. MALOOF ..... Albuquerque

ADMINISTRATIVE OFFICES AND OFFICERS, 1976-77

PRESIDENT'S OFFICE

William E. Davis, Ed.D. ..... President
U. William Weeks, M.S. ..... Executive Assistant to the President
Anthony G. Hillerman, M.A. ..... Administrative Assistant to the President

EQUAL EMPLOYMENT OPPORTUNITY OFFICE

June Wooliver, J.D. ..... Equal Employment Opportunity Officer

[a]INSTITUTIONAL RESEARCH

Morris S. Hendrickson, Ph.D. ..... Director
James G. Beard, B.S. ..... Assistant Director

INTERCOLLEGIATE ATHLETICS

Lavon J. McDonald, M.A. ..... Director of Athletics
Ike Singer, Jr. ..... Assistant Director of Athletics, Academics
Robert J. DoBell, B.S. ..... Assistant Director of Athletics, Business
Donald R. McGuire, B.A. ..... Director of Sports Information
C. William Byrne, Jr., M.B.A. ..... Executive Director, UNM Lobo Club
Linda K. Estes, M.A. ..... Director of Women's Athletics

PUBLIC INFORMATION OFFICE

Jess E. Price, B.A. ..... Director of Public Information
Margie F. Taylor, M.A.P.A. .. Assistant Director of Public Information/ Health Sciences

SECRETARY'S OFFICE

John Nicoll Durrie, B.A. ..... Secretary of the University

UNIVERSITY COUNSEL

D. Peter Rask, J.D. ..... University Counsel

PROVOST'S OFFICE

Chester Coleman Travelstead, Ph.D. ..... Provost
Joel M. Jones, Ph.D. ..... Assistant to the Provost
Regina F. Prouse ..... Administrative Officer

[b]ETHNIC STUDIES PROGRAM

Harold Bailey, Ph.D. ..... Coordinator, Afro-American Studies Program
[c]**Rudolfo N. Gallegos,** B.A. ..... Acting Coordinator, Chicano Studies Program
[d]**Tobias Duran,** M.A. ..... Coordinator, Chicano Studies Program
Gearld O. Hobson, M.A. ..... Acting Coordinator, Native American Studies

GRADUATE SCHOOL

Bernard Spolsky, Ph.D. ..... Dean
David T. Benedetti, Ph.D. ..... Associate Dean
Jane Kopp, Ph.D. ..... Associate Dean
Anne P. Taylor, Ph.D. ..... Associate Dean
Shirley A. Earickson, B.A. ..... Assistant Dean for Administration and Records
Shyam Gurbaxani, Ph.D. ..... Director, Los Alamos Graduate Center
Alan B. Reed, Ph.D. ..... Director, Santa Fe Graduate Center

GENERAL LIBRARY

Paul Vassallo, M.L.S. ..... Dean of Library Services
George B. Miller, Jr., M.S. ..... Assistant Dean for Collection Development
Alice S. Clark, M.S.L.S. ..... Assistant Dean for Readers' Services
Daniel W. Lester, M.A. ..... Assistant Dean for Technical Services

[b]WOMEN STUDIES PROGRAM

Kathryn H. Brooks, M.A. ..... Acting Coordinator
[d]**Gail Baker,** Ph.D. ..... Coordinator

OFFICE OF ASSOCIATE PROVOST AND DEAN OF FACULTIES

Clinton Adams, M.A. ..... Associate Provost/Dean of Faculties

COLLEGE OF ARTS AND SCIENCES

Nathaniel Wollman, Ph.D. ..... Dean
F. Chris Garcia, Ph.D. ..... Associate Dean
Ralph D. Norman, Ph.D. ..... Associate Dean
Julian E. White, Jr., Ph.D. ..... Associate Dean
Marshall R. Nason, Ph.D. ..... Director, Latin American Center
Nick Dean Mills, Jr., Ph.D. ..... Resident Director, Andean Study and Research Center
Nelson Davila Villagomez, Lic. en Derecho Int. ..... Associate Director
Klaus Keil, Ph.D. ..... Director, Institute of Meteoritics
James N. Spuhler, Ph.D. ..... Editor, Journal of Anthropological Research
Manuel P. Servin, Ph.D. ..... Editor, New Mexico Historical Review

ROBERT O. ANDERSON GRADUATE SCHOOL OF BUSINESS AND ADMINISTRATIVE SCIENCES; ROBERT O. ANDERSON SCHOOL OF BUSINESS AND ADMINISTRATIVE SCIENCES

Robert Richard Rehder, Ph.D. ..... Dean
H. Raymond Radosevich, Ph.D. ..... Associate Dean
John F. Warner, M.B.A. ..... Acting Director, Executive Programs

COLLEGE OF EDUCATION

David Wayne Darling, Ed.D. ..... Dean
Harold D. Drummond, Ed.D. ..... Associate Dean of Curriculum and Instruction
Paul E. Resta, Ph.D. ..... Assistant Dean for Special Projects
John R. Rinaldi, Ed.D ..... Assistant Dean for Student Affairs
Ernest Gurule, M.S. ..... Director, Cultural Awareness Center
Richard F. Tonigan, Ed.D. ..... Director, Bureau of Educational Planning and Development; Director, New Mexico Research and Study Council
Ignacio R. Cordova, Ed.D. ..... Director, Multicultural Education Center
Guy A. Watson, Ed.D. ..... Director, Learning Materials Center
Billy L. Watson, Ed.D. ..... Director, Manzanita Center
Ambrosio J. Ortega, Ph.D. ..... Director, Latin American Programs in Education

COLLEGE OF ENGINEERING

William A. Gross, Ph.D. ..... Dean
Glenn A. Whan, Ph.D. ..... Associate Dean for Academics
William R. Gafford, M.S. ..... Assistant Dean for Administration
Richard H. Williams, Sc.D. ..... Assistant Dean for Special Programs
Gerald W. May, Ph.D. ..... Director, Bureau of Engineering Research
Delmar E. Calhoun, M.S.C.E. ..... Director, Eric H. Wang Civil Engineering Research Facility

COLLEGE OF FINE ARTS

Donald Christopher McRae, M.A. ..... Interim Dean
Garo Z. Antreasian, B.F.A. ..... Associate Dean
Laurie A. Barrow, B.A. ..... Assistant Dean

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[a] Temporary assignment to President's Office pending further study and later decision.
[b] Temporary assignment to Provost's Office pending further study and later decision.
[c] 1976-1977.
[d] On leave 1976-1977.

Van Deren Coke, M.F.A. ..... Director, Art Museum
Clinton Adams, M.A. ..... Director, Tamarind Institute

UNIVERSITY COLLEGE

William Henry Huber, Jr., J.D. ..... Dean
E. Bruce Potter, Ph.D. ..... Associate Dean
Herta Teitelbaum, Ph.D. ..... Assistant Dean
Rodney W. Young, Ph.D. ..... Director of Testing
Dean G. Brodkey, Ph.D. ..... Director, English Tutorial Program

SCHOOL OF LAW

Frederick Michael Hart, J.D. ..... Dean
Peter A. Winograd, J.D. ..... Associate Dean
Philip S. Deloria, B.A. ..... Director, American Indian Law Center
Myron Fink, LL.M. ..... Law Librarian
Gary O'Dowd, J.D. ..... Director, Institute of Public Law and Services
Albert Edgar Utton, M.A. (Juris.) ..... Editor, Natural Resources Journal

SCHOOL OF ARCHITECTURE AND PLANNING

Morton Hoppenfeld, M.C.P. ..... Dean
Edith A. Cherry, M.Arch. ..... Assistant Dean

AIR FORCE RESERVE OFFICERS TRAINING CORPS UNIT

Edwin J. Conley, Jr., Lt. Col. U.S.A.F., M.B.A. ..... Professor, Aerospace Studies
David Barthel, Capt., U.S.A.F., M.A. ..... Administrative Officer
Lawrence Ashby, Maj., U.S.A.F., M.S. ..... Commandant of Cadets

NAVAL RESERVE OFFICERS TRAINING CORPS UNIT

Leo T. Profilet, Capt., U.S.N., M.P.A. ..... Commanding Officer
Bennie L. Corley, Cdr., U.S.N., M.S. ..... Executive Officer

GENERAL HONORS AND UNDERGRADUATE SEMINAR PROGRAM

John L. Howarth, Ph.D. ..... Director

DIVISION OF PUBLIC ADMINISTRATION

Leonard A. Stitelman, Ph.D. ..... Director

OFFICE OF ASSOCIATE PROVOST FOR RESEARCH AND ACADEMIC SERVICES

Paul Hyman Silverman, Ph.D., D.Sc. ..... Associate Provost for Research and Academic Services

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Lucille H. Morrow, B.A. ..... Associate Dean of Admissions
Barbara F. Leurig ..... Assistant Dean of Admissions
William L. Walter, M.A.P.A. ..... Assistant Dean of Admissions
Fred M. Chreist, Jr., M.B.A. ..... Registrar
Richard Legoza, B.A. ..... Associate Registrar
Helen G. Jackson, B.A. ..... Assistant Registrar

[e]COMPUTING CENTER

Stoughton Bell II, Ph.D. ..... Director
James W. Dowe, B.S. ..... Associate Director
Daniel T. Jones, B.U.S. ..... Assistant Director, Computing Operations
William A. Bennett, M.S. ..... Assistant Director, Computing Services
William H. McMahan, B.A. ..... Assistant Director, Computer Education and Information
Rufe J. McDonald, B.S. ..... Assistant Director, Resource Planning

ENERGY RESEARCH CENTER

Edmund B. Kasner, B.A. ..... Acting Director

INSTRUCTIONAL MEDIA SERVICES

Robert D. Kline, Ph.D. ..... Director

INTERNATIONAL PROGRAMS AND SERVICES

Gerald M. Slavin, Ph.D. ..... Director

NEW MEXICO ENERGY INSTITUTE

Thomas T. Shishman, M.B.A. ..... Director

OFFICE OF RESEARCH ADMINISTRATION

Edmund B. Kasner, B.A. ..... Director; Patent Administrator

UNIVERSITY PRESS

Hugh W. Treadwell, M.A. ..... Director

[f]OFFICE OF ASSOCIATE PROVOST FOR PUBLIC SERVICE, COMMUNITY AND REGIONAL AFFAIRS

DIVISION OF CONTINUING EDUCATION AND COMMUNITY SERVICES

Rupert A. Trujillo, Ed.D. ..... Dean
John David Giesler, M.S. ..... Associate Dean
A. Milton Garrett, Ed.D. ..... Associate Dean
Ilse Jenkins Gay, M.A. ..... Associate Dean
Calvin O. Hall, Ed.S. ..... Director, Branch College at Gallup
Eugene Paul LeDoux, Ph.D. ..... Director, Northern Branch College
Cynthia Kellen ..... Acting Director, Harwood Foundation
John W. Benton, M.A. ..... Director, Civil Preparedness School Program

INSTITUTE FOR APPLIED RESEARCH SERVICES

Lee Berkey Zink, Ph.D. ..... Director; Director, Bureau of Business and Economic Research
L. E. Roberts, M.A. ..... Associate Director; Director, Center for Human Resources Development; Acting Director, Center for Leisure and Recreation; Acting Director, Community Health Development Center
Haig Bodour, M.B.A. ..... Administrative Officer
Edwin H. Caplan, Ph.D. ..... Director, Bureau of Revenue Training Program
Louis Galvez, M.A. ..... Director, Business Assistance and Resource Center
Peter G. Montague, Ph.D. ..... Director, Center for Environmental Research and Development
[d]**Elmer A. Scholer,** Ph.D. ..... Director, Center for Leisure and Recreation
Dan D. Chavez, Ph.D. ..... Director, College Enrichment Program
Peggy J. Blackwell, Ph.D. ..... Director, Division of Behavioral Research
Robert U. Anderson, B.A. ..... Director, Division of Government Research
C. Jean Rogers, Ph.D. ..... Director, Gerontology Center
Juan Candelaria, B.A. ..... Director, Special Services Program
Stanley A. Morain, Ph.D. ..... Director, Technology Application Center
Antonio Cordova ..... Director, United Ex-Offenders for Higher Education

HEALTH SCIENCES

Leonard M. Napolitano, Ph.D. ..... Interim Vice President for Health Sciences

SCHOOL OF MEDICINE

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Francis L. Land, M.D. ..... Associate Dean for Clinical Affairs
Diane Jennings Klepper, M.D. ..... Assistant Dean for Admissions and Student Affairs
Alonzo C. Atencio, Ph.D. ..... Assistant Dean for Admissions and Student Affairs
Kenneth M. Gardner, M.D. ..... Assistant Dean for Graduate Medical Education
S. Scott Obenshain, M.D. ..... Assistant Dean for Undergraduate Medical Education

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Marion R. Fleck, Ph.D. ..... Acting Dean
Helen K. Kee, M.B.A. ..... Associate Dean

COLLEGE OF PHARMACY

Carman A. Bliss, Ph.D. ..... Dean
G. Philip Lehrman, Ph.D. ..... Assistant Dean
Kenneth H. Stahl, Ph.D. ..... Assistant Dean
[d]**Monica Novitski,** D.D.S. ..... Director, Dental Programs

[d] On leave 1976-1977.
[e] Temporary assignment to Office of Associate Provost for Research and Academic Services pending further study and later decision.
[f] Associate Provost position vacated February 1, 1977, because of leave of absence.

ALLIED HEALTH SCIENCES CENTER

Joseph V. Scaletti, Ph.D. ..... Director

BERNALILLO COUNTY MEDICAL CENTER

M. L. Cancelosi, M.P.A. ..... Administrator
Francis L. Land, M.D. ..... Clinical Director

BERNALILLO COUNTY MENTAL HEALTH/ MENTAL RETARDATION CENTER

Walter W. Winslow, Ph.D. ..... Director

CANCER RESEARCH AND TREATMENT CENTER

Morton M. Kligerman, M.D. ..... Director
Jose M. Sala, M.D. ..... Medical Director
Stephany Wilson, B.S. ..... Associate Administrator, Research
John Furman, B.A. ..... Associate Administrator, Operations/Finance
Lawrence Callan, Ph.D. ..... Associate Director, Cancer Control Program
John M. Yuhas, Ph.D. ..... Associate Director, Biology
Charles R. Key, M.D. ..... Associate Director, Tumor Registry

HEALTH SCIENCES LIBRARY

Robert T. Divett, Ed.D. ..... Acting Director
[g]**Erika B. Love,** M.A. ..... Director

RADIOLOGICAL SAFETY

Wilbur Lloyd Tabor, B.S. ..... Radiological Safety Officer

[h]STUDENT HEALTH CENTER

Joseph S. Beres, M.D. ..... Director
Jack M. McCabe, M.D. ..... Associate Director
Don House ..... Administrative Coordinator
Claude Brown, M.D. ..... University Physician
Larry Clevenger, M.D. ..... University Physician
Olga Eaton, M.D. ..... University Physician
Dennis Jackson, M.D. ..... University Physician
John Tyson, M.D. ..... University Physician
Dolores Petty, M.D. ..... University Physician
A. Cowan Collins, M.D. ..... Psychiatrist (part-time)
Richard M. Levin, Ph.D. ..... Coordinator, Mental Health Service
Marion Lauer, R.N. ..... Nurse Coordinator

VETERANS ADMINISTRATION HOSPITAL

Joseph E. Birmingham, M.S. ..... Hospital Director

BUSINESS AND FINANCE

John Perovich, M.B.A. ..... Vice President for Business and Finance

BUDGET

James A. Wiegmann, B.S. ..... Director
Teodoro Guambaña, M.A.P.A. ..... Fiscal Analyst
Alfred Chavez, Jr., B.A. ..... University Auditor

COMPTROLLER

Carroll J. Lee, M.A.P.A. ..... Comptroller
John H. Merrett, B.S. ..... Associate Comptroller for Student Accounting Services and Payroll Services
Doyle H. Kimbrough, B.B.A. ..... Associate Comptroller, Accounting
Warren D. Baur, B.S. ..... Associate Comptroller for Health Sciences
Donald J. Larrichio, M.P.A. ..... Purchasing Director
Robert A. Schulte, M.B.A. ..... Director, Housing and Food Services
A. O. Jackson, B.S. ..... Manager, UNM Bookstore
Edwin James Schodorf ..... Director, Printing Plant
Richard McGuire, B.S. in Ed. ..... Director, Golf Courses

[i]DATA PROCESSING CENTER

Louis Richard Leurig, B.A. ..... Director
Paul M. Greenberg, M.A. ..... Associate Director, Data Services
Merle I. Pawley ..... Associate Director, Systems
Doris B. Wakeland, B.S. ..... Associate Director, Information Systems
Bryan W. Dershem ..... Assistant Director, Student Records System
Ted A. Montoya ..... Assistant Director, Data Services
William R. Russell ..... Assistant Director, Financial Systems
Dennis E. Gresham, B.A. ..... Assistant Director, Technical Systems
Robert B. Johnson, Ph.D. ..... Assistant Director, HEMIS

PERSONNEL

Phillip M. Alarid, B.B.A. ..... Director; EEO Coordinator
Ray Sanders Barnard ..... Associate Director, Compensation and Benefits
Bernie S. Sanchez, B.B.A. ..... Associate Director, Training and Systems Development
Romeo Ortiz, B.A. ..... Associate Director, Health Sciences
Narciso Gallegos ..... Employee Relations Manager
Renee M. Mason ..... Employment Manager
Walter B. Lewis ..... Campus Safety Coordinator

PHYSICAL PLANT DEPARTMENT

Floyd B. Williams, Jr., B.S.C.E. ..... Director
Edmund P. Ross, B.S.C.E. ..... Assistant Director, Construction and Maintenance Division
Patrick Romero, B.A. ..... Assistant Director, Custodian Division
Donald L. Mackel, M.B.A. ..... Assistant Director, Services Division and Health Sciences Plant
Mahlon Williamson, B.S.M.E. ..... Assistant Director, Utilities Division
James Ross Callahan, B.S. ..... Administrative Coordinator

UNIVERSITY ARCHITECT'S OFFICE

Van Dorn Hooker, B.Arch. ..... University Architect
Edward B. T. Glass, B.Arch. ..... Assistant to University Architect
Joe C. McKinney, B.Arch. ..... Campus Planner
Robert J. Schmidt, M.S. ..... Project Engineer

STUDENT AFFAIRS, ALUMNI RELATIONS, AND DEVELOPMENT

Karen M. Glaser, M.S.Ed. ..... Interim Vice President
[j]**Marvin D. Johnson,** Ed.D. ..... Administrative Vice President for Student Affairs, Alumni Relations, and Development

ALUMNI OFFICE

Gwinn Henry ..... Director, Alumni Relations

DEAN OF STUDENTS

Karen M. Glaser, M.S.Ed. ..... Dean of Students; Title VI-IX Officer
Charles Paul Roberts, M.S. ..... Associate Dean of Students
Karen Abraham, Ed.D. ..... Associate Dean for Student Activities
G. Randy Boeglin, M.A. ..... Associate Dean for Housing
Mary Kay Leach, B.S. ..... Assistant Dean for Housing
Janet M. Walker, M.A. ..... Assistant Dean for Housing
Thomas Hogg III, B.U.S. ..... Assistant Dean for Student Activities
[d]**Rudolfo N. Gallegos,** B.A. ..... Assistant Dean
Kathleen Jackson-Miller, M.A. ..... Acting Assistant Dean
M. Olga Gandara, M.S. ..... Assistant Dean
Anthony A. Oliver, M.A. ..... Assistant Dean

DEVELOPMENT OFFICE

Robert Gene Lalicker, M.A. ..... Director

ETHNIC STUDENT SERVICES

Jose Antonio Mondragon, M.A. Equiv. for Admin. ..... Coordinator

STATION KNME-TV

Robert M. Gordon ..... Director

NEW MEXICO UNION

Theodore Martinez, B.A. ..... Director
Betty G. Neher ..... Associate Director

POLICE AND PARKING SERVICES

Berry Dean Cox, M.A. ..... Director

POPEJOY HALL

William J. Martin, M.F.A. ..... Director
Walter Georg Schreiber, M.F.A. ..... Technical Director

SCHOOL RELATIONS

Nancy L. Verardo, B.A. ..... Director

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[d] On leave 1976-77.
[g] Appointment effective March 1, 1977.
[h] Medical direction of the Center is the responsibility of the Vice President for Health Sciences.
[i] Temporary assignment to Office of Vice President for Business and Finance pending further study and later decision.
[j] Appointment effective April 1, 1977.

STUDENT FINANCIAL AID AND CAREER SERVICES

Charles Jack Sheehan, M.A. . . . . Director
John E. Whiteside, M.A. . . . . Associate Director
Virginia M. Edgar, M.A. . . . . Associate Director
George L. Sandoval, B.A. . . . . Associate Director
Dorothy M. Chartier, B.S. . . . . Assistant Director

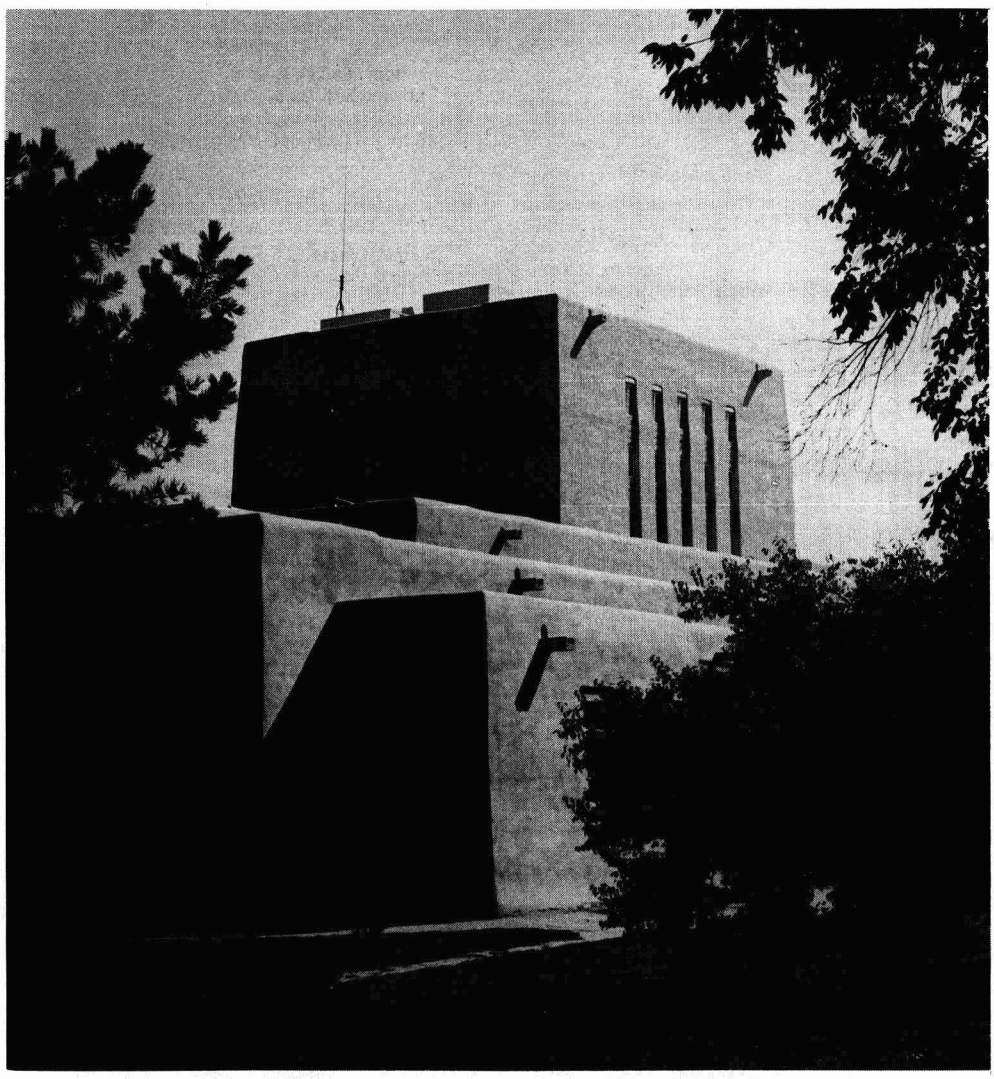
[h]STUDENT HEALTH CENTER

Joseph S. Beres, M.D. . . . . Director
Jack M. McCabe, M.D. . . . . Associate Director
Don House . . . . . Administrative Coordinator
Claude Brown, M.D. . . . . University Physician
Larry Clevenger, M.D. . . . . University Physician
Olga Eaton, M.D. . . . . University Physician
Dennis Jackson, M.D. . . . . University Physician
John Tyson, M.D. . . . . University Physician
Dolores Petty, M.D. . . . . University Physician
A. Cowan Collins, M.D. . . . . Psychiatrist (part-time)
Richard M. Levin, Ph.D. . . . . Coordinator, Mental Health Service
Marion Lauer, R.N. . . . . Nurse Coordinator

WOMEN'S COORDINATING CENTER

Veronica Jean Frakes, B.A. . . . . Coordinator

[h] Medical direction of the Center is the responsibility of the Vice President for Health Sciences.



GENERAL INFORMATION

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 essential 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 student 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 capable of professional attainment. Training in the professions is intended to supplement the general education of the student and to equip him for a career.

SCHOLARSHIP AND RESEARCH

A prime responsibility of the University is to make its contribution 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 achievement.

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.

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 created by an act of the Territorial legislature in 1889, opened as a summer normal school on June 15, 1892, and began full-term instruction on September 21 of the same year. Its development since that time has been extraordinary. The 20 acres comprising the original campus have become more than 600, and buildings have increased from a single structure to 120. In the fall of 1976, the student enrollment was nearly 24,000 and the full-time faculty numbered more than 950.

The development of new colleges and divisions has kept pace with the physical growth of the institution. The College Department became the College of Literature and Arts in 1898, later acquiring its present title of College of Arts and Sciences. The College of Engineering opened in 1906, the Graduate School in 1919. In 1928 the College of Education was created, in 1935 the General College (now the University College), and in 1936 the College of Fine Arts. A unit of the United States Naval Reserve Officers Training Corps was established May 20, 1941. In 1945 the following new divisions became an active part of the University program: the College of Pharmacy, the Division of Government Research, and the Bureau of Business Research. In 1946 the Institute of Meteoritics was added to the University's research program. The College of Business Administration and the College of Law were organized in the fall of 1947. The title College of Law was changed to School of Law in 1960; the College of Business Administration was renamed the School of Business and Administrative Sciences in 1968 and the Robert O. Anderson School of Business and Administrative Sciences in 1974. The Robert O. Anderson Graduate School of Business and Administrative Sciences was created in 1977. An Air Force Reserve Officers Training Corps unit was established in 1949. Although extension work was offered as early as 1913, the Extension Division as a separate unit with a full-time director began operations in 1928. A reorganization took place in 1953 which combined the Division of Extension, the Summer Session, the credit and non-credit evening program, conferences, and short-course offerings under the single administrative unit, Division of Extension, Summer Session, and Community Services. The Division, redesignated the Division of Continuing Education in 1968 and the Division of Continuing Education and Community Services in 1974, also administers the Community College (credit and non-credit sections). As of 1970-71, the Summer Session was placed under the same administration as the regular sessions of the University. The College of Nursing was established in 1955; the Los Alamos Graduate Center (known as Los Alamos Residence Center from 1970 to 1973) and the University College were created in 1956. Upon the establishment of the University College, the General College was abandoned. The Holloman Graduate Center was created in 1957 and in 1966 was redesignated the Holloman Graduate and Continuing Education Center; the Center was deactivated in 1971. The School of Inter-American Affairs, established in 1941, was known as the Division of Foreign Studies from 1959 to 1965 when it became the Division of Inter-American Affairs. A School of Medicine was established in 1961 and enrolled its first entering class in the fall of 1964. While initial plans were for a two-year school of the basic medical sciences, approval was received in 1965 to move to a four-year program. The Language and Area Center for Latin America was established in 1965 and was renamed the Latin American Center in 1970. In 1968, the branch college in Gallup was established, as were the Andean Study and Research Center in Quito, Ecuador, and the Institute for Social Research and Development (in 1975 renamed the Institute for Applied Research Services), and in 1969 the Division of Public Administration was created. In 1970, three ethnic studies programs—Afro-American Studies, Chicano Studies, and Native American Studies—were established. The Northern Branch College of the University, with headquarters in Espanola, was established in 1973 and the Santa Fe Graduate Center in 1975. Also in 1975, the Department of Architecture became the School of Architecture and Planning.

THE ENVIRONMENT

The University is situated in Albuquerque, the center of a metropolitan area of 350,000 inhabitants. The campus lies a mile above sea level, on a plateau overlooking the Rio Grande, and about 12 miles from the lofty Sandia Mountains. Albuquerque is noted for its dry and sunny climate. Although the weather undergoes the normal seasonal changes, temperatures are not extreme. The distinctive architectural style of the campus, contemporary in treatment but with strong influence from the Spanish and Pueblo Indian cultures, is characterized by protruding vigas, patios, balconies, portals, and earth-colored walls slightly inclined to recall ancient adobe houses. Surrounded by giant cottonwood trees, elms and mountain evergreens, the campus embodies the life style fostered by the mild, sunny climate.

University administrators have for many years realized that the situation of the University of New Mexico provides it with a wealth of source material in the historical background of the nation and that its proximity to the Indian, Spanish-American, and Mexican cultures makes it a natural

place for the study and appreciation of those cultures. They have, therefore, encouraged the development of Southwestern and Latin American studies 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 various paintings, carvings, and weavings to be found throughout the campus buildings.

LIBRARIES

More than 940,000 volumes make up the University's holdings in all libraries. The collection is expected to exceed one million volumes within the next few years as a result of a 1972 New Mexico bond issue series which made $10,000,000 available for library material purchases for all of the state's public colleges and universities.

Zimmerman Library, home of the general library collection, is located at the north end of Smith Plaza in the heart of the Central Campus. The building frequently has been cited as the best example of the modified-pueblo style of Southwestern architecture unique to the University.

A number of special collections of New Mexico and Southwestern materials are housed in Zimmerman Library. The handsome Clinton P. Anderson Room contains a notable collection of Western Americana, much of which came from Senator Anderson's private collection.

The Fine Arts Library is located in the Fine Arts Center and encompasses materials for architecture, art, drama, and music, including large numbers of slides, tapes, and scores in addition to books.

A working collection of materials pertaining to the study of business makes up the William J. Parish Memorial Library on the ground floor of the Anderson School of Business and Administrative Sciences Building.

The Schools of Law and Medicine each have their own libraries on the North Campus.

MUSEUMS

Museums are as much a part of the teaching-learning process as classrooms. Anthropology, art, biology, and geology all are represented in specialized museums on campus.

The Maxwell Museum of Anthropology, at the south end of the Anthropology Building, houses both permanent and short-term exhibits on all aspects of the story of mankind. It is open to the public as well as to students and faculty.

The University Art Museum 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 and students of the Department of Art. It is open to the public on a regular basis.

The most important single source of New Mexico vertebrates and plants is contained in the Museum of Southwestern Biology maintained by the Department of Biology. It also contains the J. Stokley Ligon bird collection and the George B. Wilmott collection of amphibians. Housed in the Biology Building, it is primarily a research museum and its use is limited to University faculty and students and other serious students of Southwestern field biology.

Minerals, rocks, fossils, and map displays are among the articles featured in the Geology Museum 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 rotating exhibits of specimens, including gems and precious stones, at the museum. The Geology Museum is open to the public.

The Institute of Meteoritics is a division within the Department of Geology and maintains on display a large collection of meteorites, including the world's largest known stone meteorite recovered in Norton County, Nebraska, in 1948.

POPEJOY HALL

The 2,000-seat Popejoy Hall, in the Fine Arts Center, is recognized as one of the finest cultural facilities in the Southwest. It is designed and acoustically equipped to accommodate virtually every type of live performance, from Broadway touring theater to symphony concerts, ballets, lectures and convocations. Its offerings draw thousands of persons each year. It is primarily an educational and cultural resource of the University and in its scheduling assigns first priority to programs of the University departments and agencies.

HARWOOD FOUNDATION

The University of New Mexico maintains in Taos the Harwood Foundation which serves as a museum, library, and community center. The Foundation has an excellent collection of paintings by artists who have lived and worked in New Mexico.

JONSON GALLERY

Open to the public daily, except Monday, from noon to 6 p.m., the Jonson Gallery at 1909 Las Lomas Rd. NE features monthly one-person or group shows by New Mexico artists, with emphasis on contemporary painting.

INSTITUTE FOR APPLIED RESEARCH SERVICES

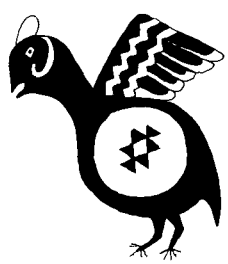
The Institute for Applied Research Services was established in 1968 to analyze current problems and to give expert assistance to community leaders, government officials, businessmen, industrial executives, minority and disadvantaged groups, and private organizations. The Institute is a major part of the University's commitment to aid and promote the social and economic development of New Mexico, the Southwest, and the nation. The Institute functions through a series of operating agencies which provide three distinct, but interrelated, kinds of services.

The **Bureau of Business Research** primarily gathers, analyzes and interprets data concerning the economic life of the State. Results of studies made by the Bureau are presented to the public through Bureau publications, the press, radio and television. The **Bureau of Revenue Training Program** also directly serves the State through its training programs, offered jointly with the UNM Anderson School of Business and Administrative Sciences, for employees of the New Mexico State Bureau of Revenue. The **Technology Application Center** specializes in information dissemination of a problem-solving nature. Both small and large firms in the State are served by its programs to communicate to private industry newly developed product ideas, technical information, and other new technology.

Covering a wide range of racial and environmental concerns to the State are the **Center for Environmental Research and Development,** the **Center for Leisure and Recreation,** the **Division of Government Research,** and the **Behavioral Research Division.** The activities of these agencies include providing technical assistance and consulting services to community and governmental agencies working with a broad range of rural and urban problems.

The **Community Health Development Center** provides technical assistance to rural health institutions and trains rural clinic management personnel. The **Business Assistance and Resource Center** provides training and assistance to small businesses and works with communities in economic development activities. The **Gerontology Center** provides training to persons working with the older American and conducts research into problems of the elderly.

The **College Enrichment Program** aids graduating seniors from low-income backgrounds who have the potential for college success but who need motivation, financial aid, and tutoring and counseling services. Also concerned with providing tutoring services to undergraduate students from disadvantaged backgrounds, the **Special Services Program** attempts to increase the rate at which students are retained at the University by helping them deal with the institutional and personal pressures that lead to dropping out. The **United Ex-Offenders Program** offers counseling and support services to students who are ex-offenders.



ADMISSION AND REGISTRATION

THE ADMISSIONS OFFICE is located in Scholes Hall. Robert M. Weaver is Dean of Admissions and Records. All correspondence about undergraduate admissions should be addressed to the Office of Admissions, The University of New Mexico, Albuquerque, New Mexico 87131.

NON-DISCRIMINATION POLICY

All applicants are considered equally, regardless of sex, race, color, national origin, marital status, age or beliefs.

APPLICATION DEADLINES

Deadlines for receipt of applications and all required credentials for the fall and spring semesters are a week in advance of the beginning of classes. A number of specialized programs with limited enrollments require applicants to have met all admission requirements a number of months in advance. Applicants for such programs should see appropriate sections of the catalog for possible early deadlines.

Students are accepted for admission to the undergraduate colleges of the University for the fall, spring, and summer sessions, except for architecture and most programs in the allied health sciences.

AMERICAN COLLEGE TESTS (ACT)

ACT results, required for advisement and placement purposes, must be filed by freshman applicants, including transfers with fewer than 26 semester hours of transferable credit. Other national tests may **not** be substituted for this requirement. 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 reach the Admissions Office directly from ACT. Scores on transcripts or student copies do not fulfill University requirements. 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 the State Department of Education or State University of the state in which it is located. Graduates of unaccredited high schools who meet admission requirements in all respects except high school accreditation may validate the unaccredited work by making qualifying scores on the American College Test.

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

Effective with the 1977 fall semester, as evidence of adequate preparation for successful college work, it will be required that transcripts of freshman applicants who graduate subsequent to February, 1977 show 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
Students intending to study nursing are advised to have completed at least 1 unit in chemistry.
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, in order to complete his prescribed curriculum without loss of time, to have completed at least 2 units of algebra, 1 unit of geometry, and ½ unit of trigonometry or higher mathematics. Students planning to enter the fields of pharmacy, pre-medicine, pre-dentistry, nursing, biology, chemistry, geology, psychology, economics, political science, sociology, or business administration are advised to 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 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 ACT score of twenty or higher in the area or areas of deficiency; (e) attainment of a composite ACT score of twenty-two or better.

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

SPECIAL ADMISSIONS. A limited number of students may be admitted to the University each year without regard to the specific subject matter requirements set forth above, upon review and approval by the Committee on Admissions and Registration.

It is strongly recommended that the student planning to study in the areas listed below have completed the indicated high school courses as background for college studies in order to complete the prescribed curriculum without a loss of time:

ENGINEERING OR ARCHITECTURE. Two years of algebra, one year of plane geometry, and one-half year of trigonometry or college preparatory mathematics.

MATHEMATICS AND STATISTICS. Two years of algebra and one year of geometry. More advanced courses, particularly trigonometry, are desirable for students planning to take calculus.

PHARMACY. One year of chemistry, one year of biology, one year of physics, 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.

NURSING. Two years of college preparatory mathematics (algebra and geometry) and at least two years of laboratory science (biology, chemistry, or physics).

DENTAL HYGIENE. Two 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. Two years of high school Spanish.

PROFESSIONAL PHYSICAL EDUCATION. College preparatory algebra, biology, chemistry, and physics.

HOW TO APPLY

ENROLL-ACT. This procedure is recommended and preferred because it eliminates a number of repetitious steps for the applicant. Admission is automatic if the applicant (1) will graduate from an accredited high school, (2) takes the ACT test on one of the national test dates as a senior in high school, (3) in taking the ACT requests scores to be sent to The University of New Mexico, and (4) earns a composite score of twenty-two or higher OR self-reports a bona fide high school grade point of at least 2.0. (Admission on the basis of a self-reported 2.0 (C) high school grade-point average is conditional upon receipt of a final high school transcript reflecting an earned 2.0 grade-point average and satisfactory completion of all subject matter requirements as described above.)

Upon receipt of ACT test scores, students who qualify for admission will be sent a certificate of admission, a verification form, and additional instructions. The verification form must be returned to the UNM Admissions Office in order to complete the admission process. Students admitted under Enroll-ACT must also remit a $15.00 nonrefundable application fee with the completed verification form and arrange to have a high school transcript sent to the Office of Admissions at the end of the first semester of the senior year.

ADMISSION BY APPLICATION. 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 to the applicant notice of acceptance or denial. When the student applies early in his senior year, a notice of eligibility is issued as soon as

processing is completed. This preliminary notice is firm for the student's planning purposes, subject only to completion of his high school program. Final notifications of admission are accompanied by registration information.

WHEN TO APPLY

A student may apply by application or by Enroll-ACT any time prior to the deadline for the semester he plans to enroll, but it is recommended that he do so early in the senior year. This is particularly important for applicants for financial aid.

UNIVERSITY COLLEGE. All freshmen are enrolled in the University College until they have completed satisfactorily a minimum of 26 semester hours and have met specific requirements for admission to the degree-granting colleges of the University or to the Bachelor of University Studies program. Students are referred to the University College section of this catalog.

EARLY ADMISSION

The University will admit a limited number of highly qualified applicants after completion of the junior year of high school. To be considered for early admission, the student must have achieved an exceptional record on a minimum of fifteen units, including the University's subject matter requirements, in an accredited high school, have the unqualified recommendation of the principal or headmaster, and have achieved a score satisfactory to the University on the American College Test. A personal interview with the Dean of Admissions and Records is usually required before a decision is made.

ADMISSION BY EXAMINATION

An applicant 18 years of age or older who has not been 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 American College Test. Students admitted on GED scores must also present high school transcripts as well as other credentials verifying completion of the University's high school level subject matter requirements either with work completed in a high school or by one of the methods for removal of deficiencies (see p. 13).

CEEB ADVANCED PLACEMENT PROGRAM

The University participates in the Advanced Placement Program of the College Entrance Examination Board. 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 Department of Biology.

Chemistry. Credit for Chemistry 121L and 122L granted for scores of 3 through 5. 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 is determined by score (3 minimum) and a personal interview with departmental faculty.

COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)

The University of New Mexico grants up to 30 semester hours credit for the CLEP general examinations. Six semester hours are allowed for each of the five examinations completed with a score of 500 or better.

All students eligible for the full 30 semester hours of credit will be classified as sophomores. Only those applying to enter the College of Arts and Sciences or the Bachelor of University Studies Program will go directly into their degree-granting college. All other students who have earned no other college credit will be admitted initially into the University College.

In the University's Colleges of Arts and Sciences, Education and Fine Arts and in its Bachelor of University Studies Program, the full 30 hours can be applied toward electives and/or group (general education) requirements. In the other colleges of the University, the number of hours earned through the CLEP general examinations that can be applied toward a degree may be considerably reduced. The reason for this is that their degree programs are quite structured with a limited allowance for electives. In all cases students are advised to counsel closely with their degree college and major department offices.

It is strongly recommended that students interested in taking the CLEP general examinations do so before entering the University. In any case, credit cannot be granted to students for the examinations or any portion taken after the student has satisfactorily completed 26 or more hours in an accredited college or university (including UNM).

The University Testing Division is a test center for the CLEP general examinations, which are offered monthly. Application must be made and fees paid in advance of the test date.

CLEP SUBJECT EXAMINATIONS. The University of New Mexico participates in the College Level Examination Program (CLEP) 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 Examination	Equivalent UNM Course	Credit Granted (semester hours)
Biology	Biol 110-111	6
Intro to Bus Law (min. score of 60 req.)	B&AS 310 or 359	3
General Chemistry	Chem 121L-122L	8
Introductory Micro- and Macroeconomics	Econ 200-201	6
Introductory Macroeconomics	Econ 200	3
Introductory Microeconomics	Econ 201	3
Money and Banking	Econ 315	3
College Composition (min. score of 55 req.)	Engl 101	3*
Analysis and Interpretation of Literature (min. score of 55 req.)	Engl 102	3*
American Literature (min. score of 55 req.)	Engl 280	3*
English Literature (min. score of 55 req.)	Engl 280	3*
Afro-American History	Hist 284	3
Western Civilization	Hist 101-102	6
American Government	Pol Sc 200	3
General Psychology	Psych 107	3
Tests and Measurements	Psych 410	3
Human Growth and Development	Psych 320	3
Educational Psychology	Psych 210	3*

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

UNM requires original transcripts of test results sent from CLEP, Box 1821, Princeton, N.J. 08540. Credit for these examinations appearing on transcripts from other colleges will not suffice.

TRANSFERRING STUDENTS

ADMISSION PROCEDURE

A new student who has attended other colleges or universities seeking admission to an undergraduate college is required to file with the Office of Admissions and Records an application for admission accompanied by a $15.00 nonrefundable application fee. The student must also request that each institution attended send an official transcript of his record to the Dean of Admissions and Records. Summaries of course work at several colleges on one transcript will not be sufficient. A student applying with fewer than 26 semester hours of college credit acceptable by this University must also have official scores on the American College Tests (ACT) and a complete official transcript of high school work sent to the Dean of Admissions and Records. Freshman transfers are required to meet high school level subject matter requirements (see p. 13). No application will be processed until all required items are on file.

A student enrolled in another institution at the time of application and who is applying for admission for the following session to one of the undergraduate colleges of this University should arrange to have an official transcript which includes a listing of courses in progress as well as all completed work sent to the Dean of Admissions and Records. On the basis of these partial credentials, a determination of admission status will be made subject only to receipt of the final transcript, enabling the student to make definite plans for transfer. A student who is permitted to register prior to receipt of a final transcript may be disenrolled if the final transcript does not reach the Admissions Office within three weeks after classes for the first semester of enrollment begin.

An 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.

The student must indicate on the application **all** previous college attendance. Applicants are not permitted to ignore previous college attendance or enrollment even though they may prefer to repeat all previous college courses. Students found guilty of nondisclosure or misrepresentation in filling out the admission application forms, or students who find after admission or enrollment that they are ineligible for academic or

other reasons to return to their last institution and who fail to report this immediately to the Admissions Office will be subject to disciplinary action, including possible dismissal from the University.

WHEN TO APPLY

The application, required credentials, and ACT results (when applicable) must be on file in the Admissions Office not more than 6 months in advance of the session for which application is being made and not less than 30 days prior to the semester for which application is being made.

UNIVERSITY COLLEGE

All 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.)

Students who have completed 26, but fewer than 64, semester hours of acceptable college credit and who are found admissible but who have not met the special admission requirements of the degree-granting college of their choice may be required to enroll in the University College until qualified for transfer to the degree-granting college. (See the respective college sections of this catalog for admission requirements.)

The University College will not accept students who have attempted 72 or more academic semester hours or who have earned 64 or more academic semester hours.

REGULATIONS

The minimum qualitative requirement for University admission is a grade average of C in all previous college work attempted. Individual colleges may require a higher average for acceptance of transfers. Applicants are referred to the portion of this catalog concerning respective colleges.

A student under academic suspension from another college or university may not enter The University of New Mexico during the term of suspension. Upon termination of the suspension period there is no bar to admission if the student is eligible in other ways.

In general, students under disciplinary suspension are not admitted to The University of New Mexico, but since causes for disciplinary suspension vary from institution to institution, a student may be suspended from one school for reasons that would not be considered actionable at another. Thus, it is the practice of The University of New Mexico to review individually applications for admission from students under disciplinary suspension from other institutions and, when justified, to make exceptions to the general policy.

Students from fully accredited institutions ordinarily will be given full credit for work transferred, insofar as the courses taken are the same as or equivalent to courses offered in the college in which the student enrolls in this institution. Courses in which grades of D are earned in other institutions are not acceptable for credit in The University of New Mexico. Credit in courses in religion may be allowed provided content can be considered literary, philosophical, or historical.

Only an approximate evaluation can be made prior to registration, and all credit is tentative until the student has completed at least one semester of satisfactory work in residence.

Credits transferred from an accredited junior college will be accepted up to a maximum to be determined by the college in which the student is enrolled. In accepting junior college credits, no courses will be considered as above sophomore level.

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 or all 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.

Applicants from recognized collegiate institutions which have not been fully accredited must have the equivalent of a 2.5 University of New Mexico index to be eligible for admission by transfer. Credit earned in such institutions is usually 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 first 30 semester hours of residence study here. Where it seems proper, examinations for the validation of credit may be required.

Independent study and 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 this University has the privilege of establishing credit here under the regulations governing special examinations to establish credit.

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

CONCURRENT ENROLLMENTS. A student enrolled in this University must have prior written approval from the dean of his college to enroll concurrently for credit in residence or by extension or correspondence in another collegiate institution.

EXAMINATION TO ESTABLISH OR VALIDATE CREDIT

A student admitted to regular status in an undergraduate college of the University may, with appropriate approval, take an examination to establish or validate credits in courses appearing in the University's general catalog. See the General Academic Regulations section of this catalog.

READMITTED STUDENTS

A student who has previously enrolled in residence in the University but whose attendance has been interrupted by one or more regular semesters is required to file an application for readmission. The degree student who, while absent from the University, has attended another collegiate institution or has taken college-level courses by correspondence or extension, must provide complete official transcripts of such studies. The application fee is not required of undergraduate students who have formerly attended the University in degree status. Students applying for readmission in regular status are required to meet the application deadlines.

A student enrolled in another institution at the time of application and applying for readmission to one of the undergraduate colleges should arrange to have forwarded an official transcript which includes a listing of courses in progress as well as all completed work. On the basis of these partial credentials a determination of readmission status will be made pending receipt of the final transcript, enabling the student to make definite plans for reentry.

Although credit earned during suspension from this University 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 of record must be furnished.

UNIVERSITY COLLEGE

The readmitted student in regular status who has not completed 26 semester hours of acceptable college credit will be required to enroll in the University College (see "University College").

The readmitted student in regular status who has completed 26 but fewer than 64 semester hours of acceptable college credit and who is found readmissible but who does not meet the special admission requirements of the degree-granting college for which application is being made may be required to enroll in the University College until qualified for transfer to the degree-granting college.

The University College will not accept students who have attempted 72 or more academic semester hours (including hours with grade of Incomplete) or who have earned 64 or more academic semester hours.

NON-DEGREE STUDENTS

Non-degree status is for applicants desiring to enroll for undergraduate course offerings of the University without entering regular status in one of the undergraduate colleges. The applicant who wishes to register in non-degree status is required to file an application for admission with the Office of Admissions.

To be eligible for enrollment in undergraduate courses in non-degree status an applicant must meet one of the following minimum requirements: (1) must be at least 21 years of age, or (2) must have achieved graduation from an accredited high school or its equivalent and been out of high school for at least one year.

It is recommended that transient or visiting students from other colleges enroll in non-degree status.

Students in the following categories are not eligible to enroll in non-degree status:

1. A student who has been declared ineligible for academic or any other reason by this University or by another collegiate institution.
2. A student who has exhausted his eligibility in the University College and who is not academically eligible to enter a degree-granting college of this University.

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 of the University.
5. Students from other countries who are in the United States on student visas.
6. A student who has been refused admission to regular status.

Previous academic records are not required of applicants for non-degree status. It is urged, however, that non-degree students planning to enroll in advanced courses requiring prerequisites bring with them at registration some evidence that prerequisites have been fulfilled.

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

Students registered in non-degree status are subject to all University regulations governing registration, attendance, and academic standing. Credit earned in non-degree status is recorded on the students' permanent records and may be applied in an undergraduate degree program when the students have satisfactorily established degree status by meeting the entrance requirements of the University and of the degree-granting college of their choice. Students in non-degree status who do not have a bachelor's degree or equivalent may not enroll in 500-600 level courses. Non-degree students are normally limited to enrollment in undergraduate credit offerings. A maximum of 6 hours of GRADUATE credit may be granted for non-degree work, but ONLY (a) if the students are later admitted to the Graduate School and (b) if their petition for such credit is approved by their major department and the Graduate School.

NON-DEGREE STATUS LIMITATIONS

A student is permitted to earn a maximum of 30 semester hours of credit in non-degree status, except for the student who has previously completed a baccalaureate degree. No undergraduate college of the University will accept in a degree program an excess of 30 semester hours earned while the student has been registered in non-degree status, nor is a college obligated to accept any hours earned in non-degree status which do not fulfill college degree requirements. If regular status is not attained, the student will be allowed to register in courses as an auditor only, receiving no credit.

The student in non-degree status may not enroll for more than 7 semester hours during a regular session without special approval of the Director of the Division of Continuing Education and Community Services. Those students in non-degree status who have completed baccalaureate degrees or higher and transient or visiting students are not subject to this limitation.

Non-degree students applying for regular status are required to follow admission procedures and to provide all items requested of transfer students (see p. 14).

CREDITS FOR TEACHER CERTIFICATION

Non-degree students desiring to take education courses leading to teacher certification must successfully complete the College of Education screening examination. Students who have an earned degree may take such education courses during their first semester of enrollment provided that they complete screening concurrently; students without an earned degree are not eligible to enroll in most education courses until completion of the screening process. All non-degree students planning to take education courses should consult the Office of the Dean, College of Education, before enrollment.

INTERNATIONAL STUDENTS

The University admits qualified students who are citizens of other countries. The noncitizen is required, for visa purposes, to enter in regular status. These students, therefore, are required to present, in addition to the application for admission: official certified transcripts from each secondary school attended; American College Tests (ACT) scores, if applicable (see p. 13); official certification of any state or national examinations taken; evidence of satisfactory results on the Testing of English as a Foreign Language (TOEFL) examination in areas where the examination is administered (in other areas, a certificate or statement from the American consul as evidence of a competent reading, writing, and speaking knowledge of the English language will be considered); and a certified statement which shows 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 Dean of Admissions and Records. TOEFL and ACT results are sent directly to the University by the testing offices. Applications for graduate-level study (beyond a first college-level degree) and all the credentials listed above (excepting only the secondary school credentials) should be mailed to the Dean of the Graduate School.

VETERANS

Veterans who served and servicemen currently serving on active duty for more than 180 days, any part of which occurred after January 31, 1955, and who (a) were released under conditions other than dishonorable, (b) were discharged for a service-connected disability, or (c) continue on active duty are eligible under the Veterans Readjustment Benefits Act of 1966 as amended.

The veteran student should follow the requirements and procedures outlined in the Admission and Registration section of this catalog in seeking admission to the University. For certification of eligibility for educational benefits under one of the Public Laws, the student can make application for V.A. benefits through the Veterans Affairs Office in Mesa Vista Hall, Room 2122. For the purposes of obtaining special services and for certifying enrollment at The University of New Mexico, contact the Veterans Guidance Center. This step is necessary each term of attendance in order to initiate G.I. 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. Students who were eligible for educational benefits under one of the Public Laws or who served on active duty during a period of at least one calendar year after January 31, 1955, must apply in the Office of Admissions and Records for such credit during the first semester of enrollment in regular status. Any credit tentatively allowed will become a part of the student's permanent record after completion of a minimum of 12 semester hours at this University. Total semester hours of military credit to be accepted in a specific degree program will be at the discretion of the degree-granting college of this University 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 recommendations of the American Council on Education or on the basis of examinations here. U.S. Armed Forces Institute courses are acceptable if courses have been taken through university extension divisions accredited by regional accrediting asociations. Other U.S.A.F.I. 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. U.S. Armed Forces Institute correspondence courses not directly transferable or validated by these tests may be established by examination in this University. No credit is allowed for the College-Level General Education Development Tests nor for the Comprehensive College Tests (General Examinations). The veteran has the opportunity, while enrolled in regular status in the University, to demonstrate his 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 section of this catalog).

REGISTRATION

ADVISEMENT

All freshmen and new transfers are required to consult an adviser prior to beginning the actual process of registering for classes. There are advisement centers in each of the degree-granting colleges as well as a special center for advisement in the University College for those students who are uncertain about the specific field in which they wish to earn a degree. Students who have previously been enrolled in the University are also 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 in advance of each session. For specific information about tuition and fees, refer to the Student Expenses section of this catalog.

SELECTIVE SERVICE REGULATIONS

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

CHANGE IN COLLEGE

Students who desire to change their registration from one college to another within this University shall petition the dean or director of the college in which they are currently enrolled. This petition requires approval of both colleges and is then filed in the Office of Admissions and Records.

CHANGE IN ADDRESS

Students are expected to keep the University authorities informed as to their address. Any change in address should be reported immediately to the Office of Admissions and Records.

COMPLETION OF STUDENT COURSES

The University will hold students responsible for completion of all courses for which they have been enrolled unless they obtain approval for a change in their registration or file an official withdrawal from the University. Students 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 major policies regarding students' educational records, academic integrity and classroom conduct. A summary of these policies follows. Complete texts are available in the **Policy Information for Students,** the **Policy Guidelines for Confidentiality of Students' Records,** and the **Faculty Handbook.** The **Policy Information for Students** is published by the Office of the Vice President for Student Affairs, Alumni Relations, and Development, and the other two publications are available in the University Secretary's Office. Copies of this information may also be obtained from the Dean of Admissions and Records.

STUDENT EDUCATIONAL RECORDS

The University has an approved policy for guidelines for confidentiality of student records. This policy is in accordance with the Family Educational Rights and Privacy Act of 1974 (P.L. 93-380, 513).

Official academic records are maintained by the Office of Admissions and Records and the Graduate School. Records and documents pertain to a student's academic standing and progress, including admissions application, high school and/or college transcripts, test scores, grades, and academic standing.

Educational records are also maintained by college offices, academic departments, Career Services, and the Office of Veterans Affairs. Officials responsible for all official educational records are identified as deans, directors, or department heads in the University catalog.

All enrolled and former students may have access to their educational records maintained within the University. Those individuals and agencies having access to a student's records include:

1. University faculty and staff performing their job responsibilities related to academic and educational programs.
2. Parents claiming the student as a dependent on their federal income tax,
3. Scholarship and other financial aid organizations supporting the student,
4. State and local officials who must, by law, receive information from UNM,
5. Organizations carrying out any accrediting program offered by UNM,
6. Appropriate persons in an emergency,
7. Any party designated by judicial order or subpoena, provided UNM notifies the student of the subpoena, and
8. Any person with the written consent of the parent for students under 18, or the student, if over 18.

A student may receive one copy of each item of information contained in the academic file in the Office of Admissions and Records, at a cost of 25 cents per page.

UNM has defined public information as: a student's name, local and permanent addresses, telephone listing, date and place of birth, major field of study, classification, dates of attendance, honors and degrees awarded, participation in officially recognized activities and sports, weight and height of members of athletic teams, and most recent previous educational agency or institution attended by the student. This information is available to the public and will be released unless an annual written request to withhold the information is on file in the Office of Admissions and Records. Such requests must be submitted to the office within two weeks of the start of each semester. Colleges and administrative departments maintaining educational records provide students with an opportunity to review their educational records. Students have the right to challenge the content of the record (except grades). If the student feels the information is misleading, inaccurate or otherwise in violation of the student's privacy or other rights, specific information concerning the student's challenge of record may be obtained from the Office of the University Secretary who maintains the policy on the confidentiality of student records.

Questions regarding student records and UNM's policy concerning the confidentiality of such records should be directed to the office maintaining the specific records in question. Any dispute over the contents of the record will be handled through informal meetings or discussions in the office where the record is maintained. If informal meetings are not satisfactory, a student has the right to a formal hearing.

ACADEMIC INTEGRITY

Students who have questions concerning scholastic regulations and procedures at the University should refer to the General Academic Regulation section of this catalog. Every student is expected to abide by the high standards of honorable conduct in academic matters. Dishonest action in connection with tests, quizzes or assignments, whether in the classroom or out, may be cause for dismissal from the University. Any student judged to have engaged in dishonest academic matters may receive a reduced grade for the work in question and a failing grade in the course.

CLASSROOM CONDUCT

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

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

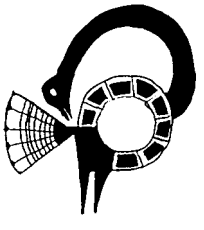
For reasons ranging from the discomfort of nonsmokers to the defacement of University property, smoking is prohibited in all classrooms and teaching laboratories. This prohibition applies at all times, and examination periods and seminars are specifically included in the nonsmoking rule.

STUDENT NUMBER

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 purposes 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.

CHANGE IN ENROLLMENT

See "General Academic Regulations."



STUDENT EXPENSES

FEES FOR REGULAR SESSION

FEES ARE CHARGED according to the number of semester hours carried by a student; auditors (those enrolled in a course for no credit) pay the same fees as students enrolled for credit. All tuition and fee charges, as well as fees for special services, are subject to change without notice.

REGISTRATION FEES

Undergraduate

	Per Semester	
	N.M. Residents	Nonresidents
Students enrolled for 12 to 18 hours:		
Tuition and Fees[1]	260.00	758.00
Student Group Health and Accident Insurance Premium (optional)[2]	20.40	20.40
Total Tuition and Fees with Group Insurance	280.40	778.40
All students enrolled for 11 hours or fewer:		
Tuition and Fees, per semester hour	21.50	63.00
Students enrolling for more than 18 hours:		
Tuition and Fees	260.00	758.00
Nonrefundable surcharge for hours in excess of 18 semester hours	21.50/cr.hr.	63.00/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. Residents	Nonresidents
Students enrolled for 12 to 18 hours:		
Tuition and Fees[1]	246.00	744.00
Graduate Student Association Fee—Nonrefundable[3]	11.00	11.00
Total Tuition and Required Fees	257.00	755.00
Student Group Health and Accident Insurance Premium (optional)[2]	20.40	20.40
Total Tuition and Fees with Group Insurance	277.40	775.40
All students enrolled for 11 or fewer hours:		
Tuition and Fees, per semester hour	21.50	63.00
Graduate Student Association Fee—Nonrefundable[3]	11.00	11.00
Students enrolling for more than 18 hours:		
Tuition and Fees	257.00	755.00
Nonrefundable surcharge for hours in excess of 18 semester hours	21.50/cr.hr.	63.00/cr.hr.

Graduate students who enroll for master's thesis or for doctoral dissertation pay regular tuition rates.

Medical School

	Per Semester	
	N.M. Residents	Nonresidents
Tuition and Fees[1]	360.00	930.00

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

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 the registration procedure.

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

Checks or money orders should be made payable to THE UNIVERSITY OF NEW MEXICO and should be mailed to the Cashier, The University of New Mexico, Albuquerque, New Mexico 87131. Do not mail cash. To assure credit to the proper student account, it is mandatory that payment be accompanied by the course request card. All payments must be accompanied by the student's name and social security number.

OTHER FEES FOR SPECIAL SERVICES

Application fee	$15.00
Change in program after end of fourth week	5.00
Late payment penalty (tuition)	5.00
Late registration fee	15.00
Removal of Incomplete grade, per course	2.00
Examination to establish or validate credit, per credit hour	2.50
Penalty for dishonored checks	5.00
Residual ACT testing	10.50
Graduate School Foreign Language Test	10.00
Miller Analogies Test	7.50
Air Force ROTC activity fee, per semester	8.00
Graduation fee, all bachelor's and master's candidates	10.00
Master's thesis binding fee	8.00
Law students' dues for N.M. Student Bar Association, per yr.	10.00
Application fee—Andean Center	15.00
Engineering co-op fee	20.00
English 010[5]	60.00
Mathematics 010[5]	60.00
Natural Science 010[5]	60.00
College preparation testing fee	5.00
Home Economics 445L (Home Management)	50.00
Horseback Riding (PE 192)[5]	45.00
English Horsemanship	65.00
Snowshoeing	
Stock Seat Horseman	65.00
Bowling fee—payable at bowling lanes	
Skin and Scuba Diving (PE 109)[5]	30.00
Adv Skin and Scuba Diving (PE 110)[5]	35.00
Skiing (PE 186) ski instruction fee,[4] payable at first class meeting	
Skiing (PE 186) ski lift fee, optional equipment rental, and tram fee—payable at first meeting	
Ice Skating (PE 184)—payable to ice arena	
Wilderness Experience (PE 194)	10.00
Chemistry laboratory breakage deposit card	10.00
Pharmacy laboratory purchase card	5.00
English Creative Writing Workshop fee	4.00
Applied music (see "Courses of Instruction" for Music)	
Mathematics 271—fee equivalent to tuition for 1 sem. hr. is charged	
Industrial Education laboratory fees (some classes)—payable at class. Maximum fee	10.00

Art Education laboratory fee—In addition to the regular tuition, a fee up to $10.00 per credit hour will be charged in each lab class, depending upon the nature of the materials necessary for the classroom.

Fine Arts course charges—Charges are made for classroom supplies and spacial services provided in many courses offered by departments of the College of Fine Arts; these charges, which vary in direct proportion to the actual cost of supplies and services provided, must be paid at the Fine Arts Box Office during the first three weeks of each semester.

BREAKAGE. Tuition provides for a nominal amount of breakage in laboratory or other courses. Excessive breakage will be charged separately to the students responsible therefor.

INSURANCE PLAN. See pp. 24-25 for explanation.

ASSOCIATED STUDENTS FEE. The assessment of this fee is a voluntary action of the student body through its organization, the Associated Students of The University of New Mexico, and the University collects this fee as an accommodation to the Associated Students. The amount of the fee is determined by vote of the members of the Associated Students and is subject to change at any time by new vote. The fee is included in the fees paid by all full-time students. The Associated Students Fee is distributed to the student organizations as shown in the budget of the

[1]Tuition and fees in the case of all new students includes a $5 matriculation fee; and in the case of all full-time students, includes fees for major athletic events.

[2]The group health and accident 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.

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

[4]Applied to college credit already earned in another college-level institution but not directly acceptable under University regulations.

[5]The refund schedule for withdrawal applies to these courses.

Associated Students. Copies of the budget may be examined in the Office of the Dean of Students.

GRADUATE STUDENT FEE. Graduate students are assessed a nonrefundable fee determined by the Graduate Student Association and set forth in their constitution. The University collects this fee as an accommodation and it is turned over to the Graduate Student Association.

STUDENT ACCOUNTS. Students are required to satisfy all financial obligations due the University prior to 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.

PROGRAM CHANGE. Five dollars per course is charged for each change of program processed after the fourth week of classes. Tuition, as applicable, is charged for all courses added. The refund schedule above, for withdrawal, applies when courses are dropped and a tuition adjustment is necessary.

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	$ 260.00
Student health and accident insurance	20.40
Books and supplies	100.00
Board and room	700.00*
Clothing, laundry, misc.	404.60
Total, per semester	$1,485.00

Nonresident students must add $498.00 per semester to the foregoing tuition.

GENERAL DEFINITION OF RESIDENT STUDENT FOR TUITION PURPOSES

By State law a resident student is defined as a person who has been continuously domiciled in New Mexico for not less than one year next preceding his/her registration for a term or semester and who can provide evidence satisfactory to the University of his/her intent to retain residence in New Mexico.

Any person unable to qualify as a resident for tuition purposes shall be required to pay the nonresident fee.

CHANGES IN RESIDENCE STATUS. Any student seeking a change in resident status should first obtain a petition for in-state tuition classification form from the Dean of Admissions and Records. A change can be made only after this petition has been completed and returned to the Dean of Admissions and Records.

Regulations governing residency for tuition purposes are established by the State of New Mexico and administered by the individual institutions of higher education.

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.

The following is a summary of the general rules:

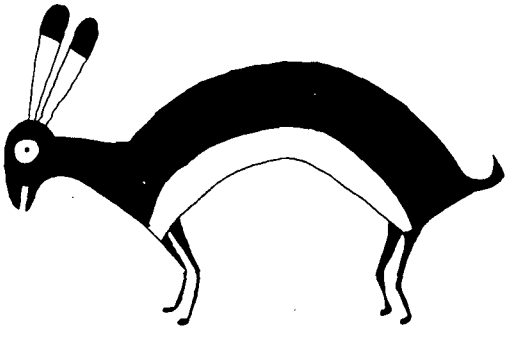
Minor students (less than 18 years of age) are entitled to resident student status upon proof of the bona fide domicile in New Mexico of their custodial parents or guardians for the one year immediately preceding the student's registration.

Adult students are entitled to resident status if they have maintained bona fide domicile in New Mexico continuously for 12 months immediately preceding their registration and if they can provide evidence satisfactory to the University of intent to retain residence in the State.

Teachers. Any person who has taught in a public or parochial school system in New Mexico on a full-time basis for a full school year of approximately nine months immediately in advance of his/her registration may qualify as a resident of New Mexico for tuition purposes, provided such person can give evidence satisfactory to the University of intent to continue to make New Mexico his/her home.

Armed forces personnel (and their dependents). Members of the U.S. armed forces assigned to active duty within the boundaries of New Mexico, or their spouses or minor children, may claim residence for tuition purposes during the period of active duty assignment within the State. Assignment of residence for tuition purposes on this basis is temporary and evidence of continued qualification must be presented in advance of each session of enrollment.

*Average per semester for the school year.



STUDENT HOUSING

FACILITIES

THE UNIVERSITY operates residence halls for students. These structures have attractive living accommodations designed to meet the academic needs of University students. The convenience and economy of housing and dining facilities located on campus within easy walking distance of classroom and recreation facilities are welcomed by students carrying a full academic load.

Residence hall living is an integral part of the total educational experience provided by the University. Each hall is supervised by professional staff experienced in counseling and advising student groups. Residents of each hall elect a governing body which plans and organizes a full program of educational and governmental activities. All residents are afforded the opportunity to enjoy and participate in an educational, group living environment.

To effectively meet the diverse needs, interests, experience, and maturity of today's students, the University provides a variety of living situations from which the student may select an option best suited to his or her lifestyle. The opportunity for student choice in his or her living arrangements permits the matching of the most effective learning situation with the individual student. It is anticipated that prospective residence hall students will confer with their parents on the choice of residence halls. Details are contained in the housing materials accompanying the application for room and board.

HOUSING POLICY

Undergraduate students may live either on or off campus. If the student elects to live on campus, he/she is required to sign a room and board contract which obligates him/her for one entire semester.

Living quarters in residence halls are available to students with a minimum course load of six (6) semester hours during the fall and spring semesters and one (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 $25.00 deposit. All students occupying rooms in residence halls are required by contract to take their meals at the University dining hall. Special diets are not provided.

RESERVATION PROCEDURE

Information concerning various living situations, housing programs, meal plans, room and board rates, and applications may be obtained by writing to the Housing Reservations and Collections Office, The University of New Mexico, La Posada Hall 201, Albuquerque, New Mexico 87131.

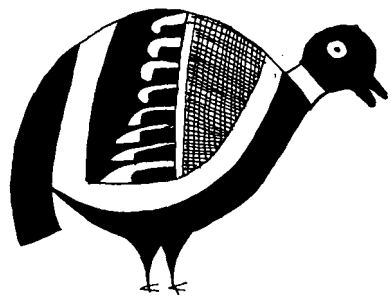
ROOM AND BOARD FEES

The 1976-77 rates for room and board ranged from $1,400 and $1,616 per academic year depending on the type of accommodation desired. To gain the maximum financial advantage of the room and board contract, students should remain in the halls for both fall and spring semesters. Students in residence for the fall semester are given the opportunity to extend their contract 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 room and University-supplied bed linens. The rates do not provide for 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.

MARRIED STUDENT HOUSING

The University operates 200 apartments: one-bedroom, two-bedroom and three-bedroom, some furnished and some unfurnished. To be eligible for married student housing one spouse must be a student, whose primary mission is the pursuit of a degree, enrolled for a minimum of six (6) hours. Apartment residents may remain in married student housing during the summer months if they plan to re-register for the fall semester. It is not necessary for the student to enroll for the summer session. Single students with legal dependents are also eligible to apply for apartment housing. Monthly rental rates range from $155 to $205 (1977-78 rates), including utilities. For further information contact Married Student Housing, The University of New Mexico, 961 Buena Vista SE, Albuquerque, New Mexico 87106.



FINANCIAL AID

THE STUDENT FINANCIAL AID AND CAREER SERVICES OFFICE is responsible for the administration of undergraduate student financial aid and financial counseling to students who apply for aid. Students who are interested in loans, scholarships, or work-study employment should apply to this office. Some of the programs administered by the Student Financial Aid and Career Services Office are: National Direct Student Loans, Nursing Student Loans, New Mexico Student Loans, Federal Guaranteed Loans, University Short Term Loans, The Federal Work-Study Program, The University Scholarship Program (both academic and athletic), the Supplemental Educational Opportunity Grant Program, and the Basic Educational Opportunity Grant Program. The Student Financial Aid and Career Services Office is located in Mesa Vista Hall.

GENERAL POLICY STATEMENT

The Faculty Committee for Scholarships, Prizes, Loans, and High School Relations sets general University of New Mexico policy and regulations under which the Student Financial Aid and Career Services Office administers programs herein described. Some of these policy statements concerning students on financial aid granted on a need basis are:

1. The primary purpose of the University's Student Aid Program is to provide financial assistance to students who would be unable to attend without it. The University, however, will honor with scholarships certain students who have superior academic records.
2. The principal and primary responsibility for financing a University education will remain with the student and the student's parents.
3. Financial aid will be offered to the student **only** to supplement the funds the student's parents can provide.
4. All students seeking admission to the University who will require financial aid are encouraged to apply for such aid.
5. Financial aid may be in the form of a scholarship, a grant-in-aid, a loan, a part-time job, or in some combination of these four.
6. The total amount of financial aid offered in various forms to a student by the University and **all other financial aid sources** will never be allowed to exceed the student's real need.
7. The ability of a family to meet University expenses will be determined by considering carefully the family's relative financial strength, in terms of income, assets, debts, and in terms of additional children to be educated. **But parents should be prepared to make financial sacrifice to pay for their child's education.**
8. The University will clearly state the total yearly expenses for the student and care will be taken to keep these up-to-date.
9. Students who need financial aid should expect to borrow a reasonable part of this aid to meet the cost of their education.
10. The University's financial aid funds and employment opportunities will be offered as a "package" arrangement to incoming and enrolled students.
11. Each student must **complete** 12 semester hours each semester with an average grade of 2.0 (or C) on a 4.0 scale. Courses taken under the Credit Option or Credit/No Credit grading systems and included in the 12 semester hours must be recorded as Credit. Incomplete courses will not be accepted within the 12-semester-hour requirement.
12. Any student who withdraws during a semester must have a valid documented reason for such withdrawal in order for aid to be renewed the following semester.
13. Any student who feels he/she has a justifiable reason for attaining less than a 2.0 average or for withdrawal under circumstances not deemed valid by the Director of Student Financial Aid and Career Services may, after an appeal to said Director has been denied, apply for a hearing before a subcommittee designated by the Chairperson of the Scholarship, Prizes, Loans, and High School Relations Committee. The application for appeal must contain the facts of the student's case in writing.

Policy on renewal of academic scholarships is:

1. Freshmen must have a 2.5 scholastic average (or C+) on a 4.0 scale, with at least 12 semester hours taken for grade purposes, for first renewal. A 3.0 is required for Presidential Scholarship recipients for each semester of enrollment. Credit/No Credit courses may not be included in the 12-hour minimum.
2. For all semesters subsequent to the first, the student must attain a 3.0 average (or B) on a 4.0 scale. A scholarship may be renewed for **one semester** if the student fails to attain a 3.0 average, provided his/her overall average, including that semester, is 3.0 or greater. If the student fails to attain an average of 3.0 in two successive semesters he/she is removed from the scholarship. The conditions provided in Item 1 concerning hours taken, etc., are continued for each semester the student receives a scholarship.
3. A student may receive a maximum of eight semesters under the scholarship.
4. Students must reapply each academic year prior to April 1 for renewal of their scholarships.
5. If a student leaves The University of New Mexico to attend another institution of higher education, renewal of the scholarship will not be considered if the student returns to the University.

A letter awarding the scholarship informs each recipient of the conditions of renewal.

LOAN FUNDS

The University administers its own student loan fund and cooperates in the administration of several others. Applications and information concerning all loan funds are available in the Student Financial Aid and Career Services Office.

The maximum amount available from the student loan fund is $100. General rules applying to the University loan funds are:

1. Applicant must have been in residence at The University of New Mexico for at least one semester.
2. Applicant must be receiving grades of C or better in subjects carried at the time of application.
3. Applicants desiring loans from the student loan fund may be requested to have the signature of one substantial local citizen on the bank note.
4. In order for a student to be eligible to apply for a student loan, it will be necessary for the student to have paid in full any loans previously obtained.

Six other loan funds are available for small, short-term loans: The Mortar Board Loan Fund, the Khatali-Vigilante Loan Fund, the Joe L. Kramer Loan Fund, the Phikeia Loan Fund, the Donald R. Fellows Memorial Loan Fund, and the S.U.B. Club Loan Fund. These six funds are administered through the Office of the Dean of Students.

Other loan funds available to students at the University are: the American Association of University Women's Loan Fund; Revolving Loan Fund of the Ancient, Free and Accepted Masons of New Mexico; Educational Loan Fund of the Grand Commandery of Knights Templar of New Mexico; the McGaffey Memorial Loan Fund of the Albuquerque Rotary Club; the Women's Club Loan Fund; the Altrusa Club Loan Fund; the G. Perry Steen Memorial Student Loan Fund; Zonta Club of Albuquerque Loan Fund; A. & L. Rosenbaum Loan Fund; the Pharmacy Scholarship Loan Fund; the Kiwanis-Milne Loan Fund; the State Bar of New Mexico Loan Fund; the Lois and Harry Bruch Memorial Loan Fund; the Walter B. Fuente Memorial Loan Fund; Clinton P. Anderson Memorial Loan Fund; Alex P. Koury Short-Term Loan Fund; the Faculty Women's Club Loan Fund; the Track Two Law Loan Fund; the H. R. "Mick" Ressler Loan Fund; the Rotary Loan Fund; the Feinsilver Loan Fund; and the Mr. and Mrs. Kilbourne L. House Memorial Loan Fund.

NATIONAL DIRECT STUDENT LOANS

The National Direct Student Loan Program is one of the features of the Higher Education Amendments Act of 1972. Under the terms of the act, funds are available for loans to qualified undergraduate and graduate students. The deadline for filing a loan application is April 1 for the fall semester and November 1 for the spring semester.

NURSING STUDENT LOANS

Low interest loans, from Federal funds, are available to regularly enrolled students in the College of Nursing who are in need of funds to help finance their education.

The student must be enrolled in the College of Nursing to qualify for a loan under this program. Interested students should apply to the Director of Student Financial Aid and Career Services, Mesa Vista Hall. Deadlines for applications are April 1 for the fall semester and November 1 for the spring semester.

FEDERAL PROGRAM OF LOW-INTEREST INSURED LOANS TO STUDENTS

The University participates in this program established under the Higher Education Act of 1965, PL 89-329, as amended. Loans made to students under this program are endorsed with Federal funds. Applicants

may secure these loans from commercial lending institutions after being certified by the University. Repayment starts nine months after the student leaves school. Interest will be paid by the Federal Government while the student remains in school as a full-time student. The student must pay 7% simple interest during the payout period beginning the first day of the tenth month after the student ceases to be a full-time student. Interested students should contact the Director of Student Financial Aid and Career Services, Mesa Vista Hall, for further information.

THE NEW MEXICO STUDENT LOAN PROGRAM

The University is a participating institution in the New Mexico Student Loan Program established by the State Legislature in January, 1970. This program provides long-term, low-interest loans to residents of New Mexico who attend educational institutions in New Mexico.

To be eligible a student must be enrolled or accepted for enrollment and demonstrate financial need. There are no interest or principal payments due until 12 months after the student leaves school. Interest starts at 7% simple interest, and payment is due after the twelfth month.

Interested students should apply to the Student Financial Aid and Career Services Office, Mesa Vista Hall, for application forms and further information.

COLLEGE WORK-STUDY PROGRAM

The University participates in the College Work-Study Program established under the Economic Opportunity Act of 1964, as amended. This program permits colleges and universities to employ students who are in need of earnings from part-time employment in order to pursue their courses of study. Students are limited to 20 hours per week while enrolled full time in the University. During summer and periods when the University is not in session, they may work 40 hours per week. Interested students should apply to the Director of Student Financial Aid and Career Services, Mesa Vista Hall, for application forms and further information.

PART-TIME EMPLOYMENT

Another opportunity for student employment is through the off-campus Part-Time Employment Service, which is a division of the Student Financial Aid and Career Services Office. These jobs are filled regularly and the average rate of pay is $2.20 an hour. A variety of jobs is usually available. The Part-Time Employment service cannot place a student in a job before the student's arrival on campus. Positions are posted with a job description, hours open for work, and salary. The student can work as many or as few hours as are offered by the employer. Off-campus employment is a service to any student desiring a job and is not based on financial need or academic standard.

VOCATIONAL REHABILITATION

Through the New Mexico Division of Vocational Rehabilitation, which operates under the supervision of the State Board for Vocational Education, the State and the Federal Government offer financial assistance for payment of tuition to those students who have physical and emotional disabilities. Other assistance may also be given to those physically handicapped students who are financially unable to provide the services for themselves.

The following are some of the requirements for acceptance for service by the program:

(1) Applicant must have a permanent physical disability, whether congenital or as a result of an accident or a disease, (2) must be capable of carrying a full class load and maintaining a C average. (3) Training in the vocation chosen must offer an opportunity for employment for the individual and must be within the student's physical and academic limitations.

Both men and women are eligible for the service. Limited services may be offered to veterans, depending upon the services offered under the G.I. Bill by the Veterans Administration.

The Rehabilitation Service is a part of our system of public education as are our grammar schools, high schools, colleges, and universities. Those who can qualify should apply for this service.

HOW TO APPLY. Those students having disabilities who wish to apply should do so by writing to one of the New Mexico Rehabilitation Offices at: the Oil Center Building, 3010 Monte Vista NE, Suite 102, Albuquerque, New Mexico 87106; Northeast Heights Office, Oil Center Building, 117 Richmond NE, Albuquerque, New Mexico 87106; 216 Washington Avenue, Santa Fe, New Mexico 87501; 200 West First Street, Roswell, New Mexico 88201; Dennison Building, 1480 N. Main Street, Las Cruces, New Mexico 88001; 207 East Broadway, Farmington, New Mexico 87401; P.O. Box 1388, Las Vegas, New Mexico 87701; P.O. Box 1847, Taos, New Mexico 87571; 1095 North Canal, Carlsbad, New Mexico 88220; 421 Connelly, Clovis, New Mexico 88101; 211 West Mesa, Gallup, New Mexico 87301; P.O. Box 00, Española, New Mexico 87532; 808 Pinos Altos, Room 8, Silver City, New Mexico 88061. An application for services must be made and written authorization for services must be secured from the Division of Vocational Rehabilitation prior to the rendering of services for a vocational rehabilitation student.

SCHOLARSHIPS AND AWARDS

The University awards scholarships to a substantial number of its entering freshmen and upperclassmen each year. The qualifications expected of the recipients and the amounts of the awards vary. Some carry special stipulations or require that the student major in a specific field, but the majority of awards require only a strong scholastic record and a need for financial assistance. Information on all scholarships and awards may be obtained from the Student Financial Aid and Career Services Office.

Students holding University sponsored scholarships must reapply for them each year. The deadline for renewal application is April 1.

Application for admission to The University of New Mexico and scores on the American College Tests (in the case of freshman applicants) must be on file in the Admissions Office before a student can be awarded a scholarship (see Admission section of this catalog). A scholarship application must also be submitted to the Student Financial Aid and Career Services Office; only one scholarship application is required regardless of the number of scholarships in which a student may be interested. Scholarship application forms may be obtained from the Student Financial Aid and Career Services Office. High school seniors may also obtain forms from their high school counselors or principals. March 1 is the deadline for freshman applications for financial aid for the following fall semester.

These factors are considered in awarding scholarships: (1) the academic record; (2) scores on the ACT, if applicable; (3) need for financial assistance; (4) the recommendation of the student's counselor or principal (in the case of freshman applicants); (5) special abilities and/or accomplishments.

Presidential Scholarships are awarded to incoming freshmen who have demonstrated leadership abilities and possess a potential for outstanding academic success. Scholarships are awarded each year and are renewable for four years for recipients meeting the requirements. Presidential Scholarship applications require high school grade transcripts and three recommendations: one each from the student's principal, guidance counselor, and a teacher.

The Thomas S. and Louise Freeman Bell and the Daniel C. Jackling scholarships are for students with outstanding academic records. The Bell and Jackling scholarships vary in amount from $250 to $500, with a financial evaluation by College Scholarship Service used as the criterion for determining the amount of the award. Tuition scholarships are awarded to students with outstanding academic records. Financial need is not so important a consideration in the awarding of these scholarships as in the Bell and Jackling awards.

Athletic grants-in-aid are available to a limited number of students and are granted on the basis of recommendation and predicted academic success. The aggregate of all institutional aid authorized by these grants-in-aid to any individual does not exceed tuition, general institutional fees, board and room, and books.

A few scholarships are available for students who are not residents of New Mexico. These students are required to file statements with College Scholarship Service regardless of the award sought.

Fellowships and assistantships for graduate students are also available. Application for these may be made to the Dean of the Graduate School.

SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANTS

The University of New Mexico, under provision of the Higher Education Act of 1965, PL 89-389, as amended, awards several Supplemental Educational Opportunity Grants each year to incoming freshmen and enrolled students. In order to be selected a student must: (1) be accepted for enrollment and be in good standing; (2) show evidence of academic or creative promise and capability of maintaining good standing in the chosen course of study; (3) be of **exceptional financial need** and unable to pursue a course of study without the grant.

Students who think they are qualified should write or see the Director of Student Financial Aid and Career Services, Mesa Vista Hall, for application forms and further information.

BASIC EDUCATIONAL OPPORTUNITY GRANT

The University of New Mexico is an eligible institution for Basic Educational Opportunity Grant Program recipients. This entitlement program is available to all eligible undergraduate students. The grants are renewable for four academic years. Information pertaining to this program and applications are available in the Student Financial Aid and Career Services Office. Students may also obtain applications in their high schools, post offices, and other public agencies.

CAREER SERVICES

Career Services is a centralized student services activity established to assist all University students and UNM graduates achieve their career employment goals. This office works with all levels of students who are in need of career information and maintains close contact with all colleges and departments within the University in its total effort to assist UNM graduates in achieving their career goals.

Career advisory service and assistance is provided eligible students and alumni interested in commercial, industrial, governmental, educational, or service professions. Information concerning new or existing career opportunities, trends in employment, and educational requirements is furnished those who desire the assistance of this office.

Career Services acts as a general clearinghouse for registrants seeking employment and for employers seeking college-trained personnel for business, education, or service positions. Prospective employers are provided administrative assistance and facilities for interviewing candidates. Registrants are furnished assistance in preparing a career file encompassing biographical data, scholarship 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 the services of this office are desired.

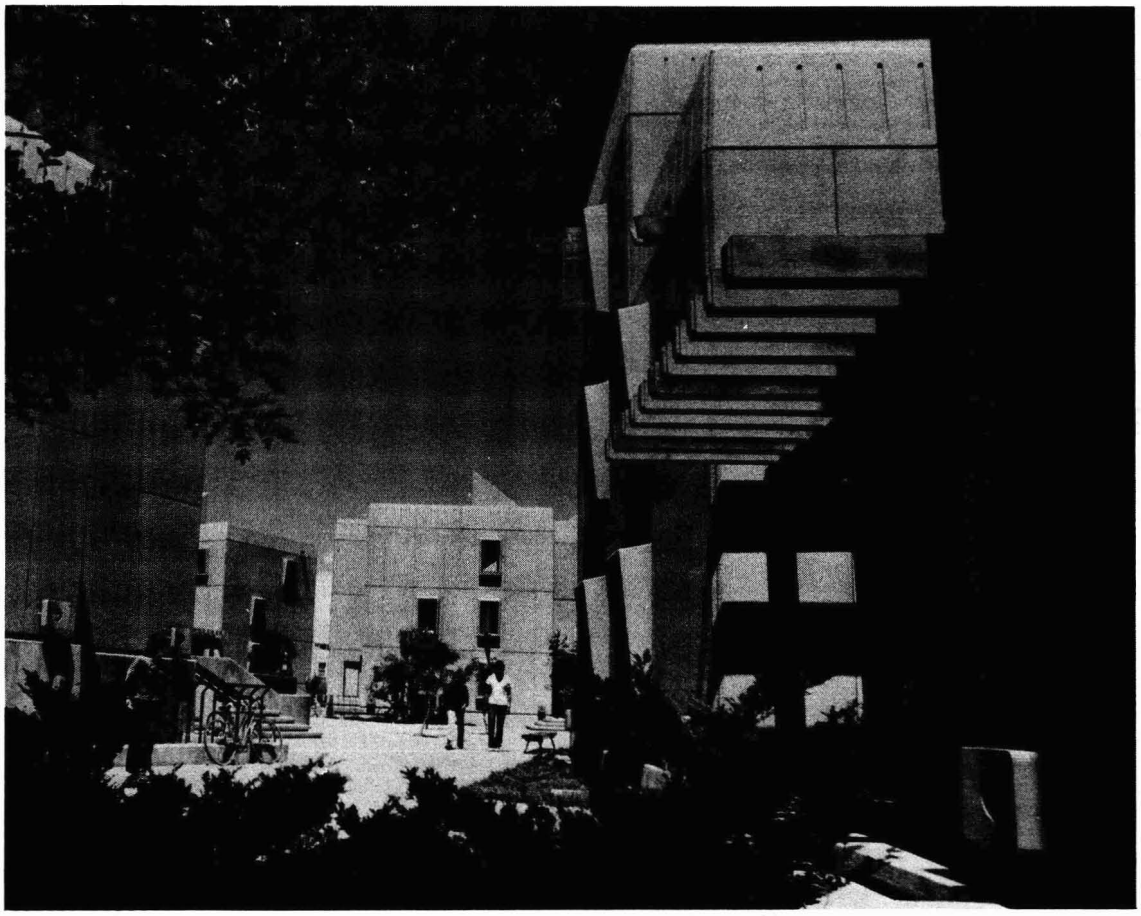
This office maintains continuous contact with the conditions and trends of the nation's job market and with representatives of commerce and education. Every attempt is made to assist candidates in achieving desired career employment according to their aptitudes and abilities.

Career Services is located on the second floor, south wing of Mesa Vista Hall. Services rendered by Career Services to students and prospective employers are free.

VETERANS AFFAIRS

The University of New Mexico is approved for certification of students who are eligible for educational assistance under the G.I. Bill. The Veterans Affairs Office was established to provide the services required.

Persons eligible for veterans' benefits should follow the requirements and procedures outlined in the Admission and Registration section of this catalog in seeking admission to the University. Students receiving educational assistance must be making satisfactory progress toward an educational goal to continue receiving payment. Generally, students are making satisfactory progress by following the scholastic requirements and attendance policies found in this catalog; however, veterans must confirm details with the Veterans Affairs Office, Mesa Vista Hall.



STUDENT SERVICES

ALL DIVISIONS of the University concerned with student services outside the classroom are under the coordinating supervision of the Vice-President for Student Affairs, Alumni Relations, and Development. There follow descriptions of some of the services and programs which supplement the University's educational program and assist the student in his academic and personal development.

DEAN OF STUDENTS

The Office of the Dean of Students is a multifaceted administrative organization concerned primarily with student life and education outside of the classroom. The Dean of Students is responsible for: (1) The student personnel aspects such as programming, counseling, and staff training in the **Residence Halls.** (2) The **Student Activities Office** (located in the Student Union) which coordinates the chartering of all student organizations, provides assistance and initiates programs in conjunction with student organizations and assists students in obtaining a wide range of University-sponsored activities and becoming more involved in campus life. This office supervises the Student Information Center which is located in the main lobby of the New Mexico Union and is a centralized area for students and visitors to receive information about the UNM campus. It is staffed by specially trained student employees. Information provided by the Center includes standard University policies and regulations, dates and times of all campus events, referrals to appropriate campus office, information regarding student organizations, and directions and campus maps. (3) The **Administrative Office** of the **Dean of Students** is located in the south wing of Mesa Vista Hall (off the mall). The professional staff is available for personal counseling, academic advisement, and referrals to other campus agencies. Their function is similar to that of an ombudsman, and they will help interpret to students University policies and procedures. Other functions of this office include short-term loans, record of illness, withdrawal from the University and writing recommendations for students to prospective employers and graduate schools. Generally speaking, the Dean of Students staff will assist students in obtaining any information concerning the University. (4) Special programs and services are available to disabled students who need assistance. Further information may be obtained through the Office of the Dean of Students, Mesa Vista 1176, telephone 227-6448, or through The Special Services Program, Mesa Vista 2013, telephone 277-3506. (5) As Title VI and Title IX Officer, Dean Karen Glaser has been assigned the responsibility for promoting and encouraging progress in meeting the University's equal opportunity goals. All grievances, questions, or requests for information relating to student concerns should be referred to Dean Karen Glaser, Mesa Vista Hall 1176, 277-6448.

OFFICE OF INTERNATIONAL PROGRAMS AND SERVICES

INTERNATIONAL PROGRAMS. The Office of International Programs and Services is established for the purpose of coordinating and facilitating most of the international activities of The University of New Mexico. These activities include study abroad programs, foreign student and scholar programs, coordination with academic degree programs, research and training opportunities.

In addition, our objectives have increased global awareness, entailed curriculum development, cultural interaction, participation in international organizations, both local and international, and pursuit of international scholarship and fellowship opportunities.

INTERNATIONAL STUDENT AND SCHOLAR PROGRAMS. The University of New Mexico is committed to the support and encouragement of an international student program. The International Office provides services to foreign students and scholars in an effort to insure the best possible overall experience at the University. Foreign students are encouraged to avail themselves of such University facilities as academic advising, student health insurance, counseling and testing, housing and employment.

In addition to making proper referrals, the International Office provides orientation programs, community hospitality, immigration assistance, and a maximum of personal attention to the unique problems of the foreign student.

FULBRIGHT PROGRAM. The International Office publicizes the Fulbright competition, announces grants offered, provides application forms, counsels American students, and arranges faculty committees for interviews and evaluations. It also provides information and counseling for all other study abroad awards, including the several Marshall Scholarship programs, Foreign Area Fellowships, Doherty Foundation, etc.

AMERICAN STUDENTS ABROAD. Information and counseling are offered to American students who wish to study abroad. The Office maintains a collection of books and brochures on both foreign study and student travel. It also issues the International Student Identification Card to eligible persons.

UNM SUMMER SESSIONS ABROAD. The University of New Mexico offers two summer sessions abroad for the cultural enrichment of its students.

UNM Summer Session—Guadalajara, Mexico

Each year from approximately June 6 to July 15, The University of New Mexico, in cooperation with the Universidad Autonoma de Guadalajara, sponsors a summer session in Guadalajara, Mexico. Students may take a maximum of six credit hours selected from course offerings. Normally, three or four semesters of college-level Spanish or equivalent language experience are considered necessary for successful participation, with the exception of those enrolled only in Spanish 203. Before undertaking registration, interested students should make inquiries at the Office of International Programs and Services, UNM.

UNM Summer Session—Madrid, Spain

From approximately June 6 to July 15, The University of New Mexico sponsors a summer session in Madrid, Spain. Students may take a maximum of six credits selected from course offerings. Full-time qualified students will be given preference for admission to the program. All students will be interviewed to ascertain the level of their linguistic and academic participation.

THE INTERNATIONAL CENTER

The International Center, a facility which is sponsored by the Associated Students of The University of New Mexico, is the focal point of cross-cultural interaction in the community.

The International Center coordinates programs with the University as well as various Albuquerque community organizations. With assistance from the Office of International Programs and Services, the Center sponsors programs designed to promote goodwill and understanding among the students from some 57 foreign countries and the American students. Both American and foreign students participate in the administration of the International Center.

HEALTH SERVICE

The Student Health Center is located on the main campus between Johnson Gym and the Student Union. It provides facilities for essentially the same kind of medical care that one would expect to receive from a private physician. There are eight full-time general physicians and nine consultant specialists operating a clinic 8 a.m.-4 p.m. Monday through Friday and 10 a.m.-12 noon on Saturday. In addition, there is a 24-hour emergency service staffed by nurses, physician assistants, and aides, with a staff physician on call.

A complete clinical laboratory and radiology service is available at the Health Center. There is a 10-bed infirmary, immunization clinic, and a mental health service at the Center.

Students are seen primarily by appointment, but there is a screening clinic and walk-in service to serve students whose treatment should not be postponed.

The Student Health Center is funded through a budgeted allocation from student fees and is available to all students carrying six or more semester hours. With the exception of certain lab tests, meals in the infirmary, and medication, all services are free of charge.

Students enrolling for the first time or re-enrolling after an absence of a year or more are required to fill out a health status questionnaire. The staff at the Health Center observes the same ethical codes concerning confidentiality as your family physician does. Information regarding an individual's health status leaves the Health Center only after written permission from the student is received.

The Student Health Center, in cooperation with the College of Pharmacy, provides convenient pharmaceutical services where students may purchase prescription and nonprescription items. A broad formulary is offered based upon the most commonly prescribed medications. The pharmacy hours are 8:30 a.m.-4:30 p.m. Students enrolled for six hours or more may utilize the pharmacy services.

STUDENT HEALTH INSURANCE

The University provides an optional health insurance program with a national insurance company. It provides for benefits to apply against expenses incurred for emergency care, consultation, and services not available at the Student Health Center. Coverage is in effect during the entire semester, whether at school or away on vacation periods. Additional coverage for nonstudent spouse and/or dependents is available.

Any student enrolled during a regular semester for six or more semester hours is eligible to participate in the plan upon payment of a special fee. Except for emergencies, students must be referred from the Student Health Center to be eligible for insurance benefits.

Details are mailed to all new and readmitted students as part of admissions procedure. In addition, a representative of the insurance company holds regular hours at the Health Center to answer questions and assist with claims.

WOMEN'S CENTER

The Center is a resource, service, and referral center. The services include a comprehensive library on women; information and referral files; counseling in personal, intrapersonal, and vocational areas; a reentry program for returning women students. The Center staff works to facilitate the overall needs of women at UNM.

The University Clinical Law Program has an office in the Women's Center.

NEW MEXICO UNION

The New Mexico Union is planned to provide a focal point for the cultural and recreational activities of the University. All students are members of the Union, and their cooperation and contributions are necessary to insure its successful operation. The Union Board, made up of student, faculty, and administrative representatives, formulates policy for the operation of the Union.

Union food services include a cafeteria with a rotating food service counter, the Casa del Sol (a Mexican food facility on the second floor), a fast food operation, a deli, and a sweet shop offering ice cream and pastries. The Dean of Student Activities, Associated Students of The University of New Mexico, the Graduate Student Association, the Alumni Association, and the Department of Development have offices in the Union. Lounges, a ballroom, theater, and many meeting rooms enable the Union to serve the University community, and scheduling of events in these areas is a function of the Union Director's office.

ATHLETICS

The University's intercollegiate athletic program is a department within itself but works closely with the Physical Education Department, which, in turn, shares a responsibility with all other segments of the University to maintain general academic standards of high quality. Athletes are expected to participate, first and primarily, as full members of the student community. The faculty of the University, within its powers, assumes responsibility for keeping the environment conducive to these objectives.

Men's intercollegiate athletics are governed by regulations of the Western Athletic Conference and the National Collegiate Athletic Association. Women's athletics are governed by the Intermountain Athletic Conference and the Association for Intercollegiate Athletics for Women. All intercollegiate athletics are subject to the athletic policies of the University and North Central Association of Colleges and Secondary Schools.

Varsity sports include football, basketball, track and field, cross country, volleyball, baseball, tennis, golf, swimming, wrestling, gymnastics, skiing, softball, and water polo.

Through the Health, Physical Education and Recreation Department, the University conducts an intramural and recreation program. The intramural program includes swimming, tennis, handball, golf, cross country, track and field, volleyball, touch football, bowling, baseball, softball, and basketball. In addition, facilities are available for free play, corecreation, and sports clubs. For additional information contact the Intramural Office in Johnson or Carlisle Gymnasiums.

The Athletic offices and service facilities for student athletes are located on the south campus and are coordinated with many indoor sports on the main campus in Johnson Gymnasium, which includes an indoor pool, two large arenas, handball courts, and other specialized areas. The University Basketball Arena, with a seating capacity of 17,300, is located on the south campus, just west of University Stadium, which seats 31,000. Outdoor recreational facilities maintained by the University include a golf course, tennis courts, and numerous playing fields, located both on the main and south campuses. Additionally, a modern baseball field is located on the south campus.

RELIGIOUS LIFE ON THE CAMPUS

While the University itself maintains no religious program, various religious disciplines maintain campus centers which serve the University community. Ministers, priests, and rabbis are available to assist the students through worship services, personal counsel, and in group activities. The various religious centers offer courses in religion and Bible study each semester.

Religious organizations affiliated with the University and serving the university community are: Albuquerque Christian Fellowship, Baha'i Student Association, Baptist Student Union, Campus Crusade for Christ, Canterbury Chapel, Christian Science Organization, Christian Student Center, Divine Light Mission, Islamic Society, Jewish Student Union, Lobo Christian Fellowship, Lutheran Student Association, Aquinas Newman Center, Nichiren Shoshu Association, Orthodox Baha'i Club, Pentecostal Student Fellowship International, Student Association of the Church of Jesus Christ of Latter Day Saints, Symphony of Life, 3HO Foundation (Happy, Healthy, Holy Organization), and the United Ministries Center.

The Alumni Memorial Chapel, located conveniently in the center of the campus, is a nonsectarian religious sanctuary financed by contributions from alumni and friends of the University. It is available to any religious group for meetings on a scheduled basis. It is also open throughout the school year for private meditations. It has become a very popular wedding chapel available to alumni and members of the University community. The Chapel may be scheduled through the Dean of Students Office, Mesa Vista Hall, or telephone 277-6448.

STUDENT ORGANIZATIONS

ASSOCIATED STUDENTS

All undergraduate students enrolled for 12 or more semester hours are affiliated as "The Associated Students of The University of New Mexico." The Associated Students functions under a constitution approved by student referendum, by the faculty, and by the Regents of the University. The government of the Associated Students has three principal branches: the executive, consisting of the President and certain appointed executive officers; the legislative, consisting of the Student Senate composed of 20 senators elected at large; and the judicial, consisting of the Student Court appointed by the President and approved by the Senate.

HONORARY AND SERVICE ORGANIZATIONS

The following organizations are active: Phi Beta Kappa, Phi Eta Sigma, Phi Kappa Phi, Blue Key, Mortar Board, Alpha Phi Omega, Las Campañas, and Spurs.

Many professional and departmental organizations are also active on the campus.

SOCIAL GROUPS

Fraternities: Alpha Tau Omega, Kappa Alpha, Lambda Chi Alpha, Phi Gamma Delta, Phi Delta Theta, Phi Kappa Psi, Phi Sigma Kappa, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Pi Epsilon.

Sororities: Alpha Chi Omega, Alpha Delta Pi, Chi Omega, Delta Delta Delta, Kappa Alpha Theta, Kappa Kappa Gamma, Phi Mu, Pi Beta Phi.

Fraternity and sorority relations are controlled by the Interfraternity Council and the Panhellenic Council respectively.

Other social groups: Town Club, Delta Sigma Theta, Omega Psi Phi.

STUDENT PUBLICATIONS

The **New Mexico Daily Lobo,** the campus newspaper, is published daily every regular week of the University year. The **Thunderbird,** a literary magazine containing art and literary contributions submitted by students, is published periodically.

The publications are edited and managed by students under the supervision of the Student Publications Board comprised of both student and faculty members, the majority of the Board, however, being student members.

The student editors and managers of these publications are elected by the Publications Board for a period of two semesters.

CAMPUS PARKING INFORMATION

If a student desires to park a motor vehicle within a zone area on campus, a parking permit is required. Paid parking is in effect Monday through Friday, 7:00 a.m. to 4:30 p.m. Visitors should park at meters or make arrangements for parking at Parking Services, 1821 Roma NE. The campus is divided into lettered zones and students living in residence halls will be allowed to park in zone "G" only, which is the zone around the dormitory areas and includes part of a large lot at the Computing Center. Commuting students may purchase parking permits for the spaces available in any zone. In addition, there is free parking on the north campus with free shuttle bus service. The bus service will start at 7:15 a.m. and the last bus will depart for the north campus lots at 6:15 p.m. on scheduled class days only. The bus will stop on the central campus on a ten minute schedule. Overnight parking in the free lots will be at the owner's risk.

The total parking fee for both semesters will be $27. A second semester permit fee is $13.50, which must be paid at time of application. If a student withdraws from school, a refund for the second semester only will be allowed upon surrender of the permit before the second semester starts. Motorcycles and other motor driven cycles will pay $15 per year and parking will be restricted to cycle parking lots only. The parking permit will designate the zone eligibility, and parking will be restricted to

that zone. A copy of the UNM Parking and Traffic Regulations will be furnished with the parking permit. Please read it thoroughly.

A student with a serious physical handicap may secure a letter from the Student Health Center requesting special zone parking.

Only Parking Services can authorize parking and sell permits. Permits are nontransferable. You should not buy a permit from anyone except Parking Services, nor should you use anyone else's permit. If you use a permit not issued by Parking Services, your car may be towed and impounded and you can be charged with fraud, which carries a penalty of 6 months or a $100 fine or both.

Students with out-of-state license plates must have New Mexico plates within 30 days or purchase a nonresident student sticker for $1.00 from Parking Services.

Changes may occur in the parking and traffic regulations. Please check with Parking Services, 277-3729.

GENERAL ACADEMIC REGULATIONS

STUDENTS are advised to familiarize themselves with the academic regulations of the University. They are solely responsible for complying with all regulations of the University, of their respective colleges, and of the departments from which they take courses and for fulfilling all requirements for their particular degrees.

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 are numbered from 001 through 799. Courses from 001 to 099 may or may not carry credit but are not applicable toward a baccalaureate degree; from 100 to 199, lower division, are normally open to freshmen; 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 only to students enrolled in the Graduate School, 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. See the section of this catalog concerning your college 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 fourth week of a semester or second 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 page for specific information concerning CR/NC option grading.)
NC, No Credit. Not computed in scholarship 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.
W, Dropped Without Discredit. W is given in any course which students drop officially after the fourth week of the semester or second week of the summer session, while doing passing work. (See "Change in Program of Studies" and "Withdrawal from the University.")

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

Effective with the 1970 spring semester, the University adopted regulations whereby students may elect to take certain courses on a Credit Grade Option basis. These regulations were amended in the spring of 1975. Therefore the following regulations are in effect beginning with fall semester, 1975.

1. Only one course per semester will be allowed.
2. A maximum of 24 hours under this option will be allowed toward the degree.
3. CR credit is the equivalent of at least a grade of C.
4. The CR credit option system 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.
   The following may **not** be taken under this option: (a) courses in General Honors Program and the Undergraduate Seminar Program; (b) courses which are a 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 which are a part of the student's minor (see specific colleges and/or departmental requirements); (d) examinations to establish credit; (e) correspondence courses. However, students cannot be penalized by a department if, in the process of selecting or changing major fields, they have taken a course in their major on a credit grade option basis.
6. Students may **not** enroll on the credit option basis when repeating a course in which they have previously been enrolled under the regular grading system.
7. 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.

CHANGE IN GRADE. No grade except I can be raised by completion of other extra work or by a special examination. A grade of I can be changed to a passing grade in a manner to be determined in each case by the instructor concerned,with the approval of the dean or director of the college. The I may be removed by the student upon completion of the work of the course (1) by the published ending date of the next semester of residence, or (2) within the next 4 semesters if the student does not reenroll in residence. The student may change the I to a passing grade by satisfactorily performing the work prescribed by the instructor. (Arrangements should be made with the instructor within a reasonable time in advance of the planned date of completion.) The student obtains from the office of the dean or director a permit to remove the I, pays the $2 fee, and takes the card to the instructor, who completes it and returns it to the Office of Admissions and Records where official entry on the student's record is made. Effective with the fall semester, 1975, a grade of Incomplete which is not removed during the periods and by the procedure prescribed above automatically becomes an F. The removal form must be in the Admissions and Records Office by the last day of the appropriate semester.

Any other change in grade, after the grade is on record in the Office of Admissions and Records, may be made only after reasons for such 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 obtained by dividing the total number of grade points earned at The University of New Mexico by the total number of hours attempted with letter grades in courses numbered 100 or above at The University of New Mexico. Hours given a grade of W, CR, NC, or I are excluded in the computation. Honors and prizes depending upon scholarship are determined by ranking students according to this index.

STUDENT ENROLLMENT

Effective with the fall semester, 1975, a maximum load of 20 semester hours has been established for undergraduate students. For the summer session this maximum will be 10 semester hours. A student must obtain special approval from the student's college for any hours above these maximums. Students in non-degree status who have not earned at least a baccalaureate-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 Calendar.)

DROP. A student has the right to drop a course, or courses, during the first four weeks of the semester or the first two weeks of the summer session without a grade. When a student drops a course after the first four weeks of the semester or the second week of the summer session up to and including the last day of the twelfth week of the semester or the sixth week of the summer session, the student will receive a grade of W if passing the course or a grade of F for undergraduates (NC for graduates) if failing the course at the time of dropping, as determined by the instructor in the course. A student cannot drop a course, or courses, after the twelfth week of the semester or the sixth week of the summer session and receive a grade of W without petition to, and approval by, the dean or director of the student's college. This approval is limited to hardship cases involving circumstances beyond the student's control. See below (Withdrawal from the University) if dropping all courses.

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 official change of program procedures, they will receive a grade of F in the course. A fee of $5 is charged for any change made in the student's program of studies after the end of the fourth week of the semester or after the end of the second week of the summer session.

CHANGE IN GRADING OPTION. No change in grading option (including audit, credit option, and letter grade) in any course can be made after the fourth week of the semester or the second week of the summer session.

Any change in grading option after registration has been completed requires completion of a Program Change Request.

It is the student's sole responsibility to make certain that he or she is registered in any course on the proper grading option.

Graduate students are referred to the Graduate 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 program to be in excess of the maximum load allowed and only after permission has been given by the dean or director of his college.

WITHDRAWAL FROM THE UNIVERSITY

When students wish to withdraw from all the courses in which they are enrolled during a semester, or summer session, they should secure a withdrawal card from the Office of the Dean of Students. When a student withdraws officially from the University during the first four weeks of the semester or the first two weeks of the summer session no grades are assigned, with the exception of grades of F assigned on the basis of University regulations relating to student dishonesty. Grades of W or F as determined by the instructors in their courses are shown on the students' records if they withdraw officially from the University from the end of the fourth week through the twelfth week of the semester or from the end of the second week through the sixth week of the summer session. After the end of the twelfth week of the semester or the sixth week of the summer session no student is permitted to withdraw with a grade of W without petition to, and approval by, the dean or director of his college or school. This approval is limited to hardship cases involving circumstances beyond the students' control. WHEN STUDENTS LEAVE THE UNIVERSITY DURING A SEMESTER AND DO NOT CARRY OUT THEIR WITHDRAWAL ACCORDING TO THIS REGULATION, THEY BECOME LIABLE FOR A GRADE OF F IN ALL THEIR CLASSES, EVEN THOUGH THEY ARE PASSING THEIR COURSES UP TO THE TIME OF LEAVING.

MILITARY WITHDRAWAL. Under faculty regulations undergraduate students who formally withdraw from the University to enter military service after completing twelve 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 formal withdrawal. They will receive a grade of W 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 that 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 COURSE

A student may repeat a course without special permission but may receive credit only once. Effective with the 1971 spring semester, only hours and points for the repetition are counted in the scholarship index, provided the repetition resulted in a higher grade. The original grade remains on the record but is not counted in the grade-point average.

A student who fails a course at The University of New Mexico 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 index.

During the registration procedure it is the responsibility of the 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, without credit, provided permission of the instructor concerned is obtained. Students changing to audit status after late registration do not need instructor permission; however, any change to audit is governed by "Change in Grading Option" regulations. An auditor who fails to attend class may be dropped at the instructor's request. The fee for audited courses is the same as for credit courses.

SCHOLASTIC REGULATIONS

The standing of all students (including those who withdraw from the University during the session) with respect to scholarship is checked at the end of each semester and summer session. At such times, all students who are deficient in scholarship are placed on probation, or suspended, in accordance with the following regulations.

PROBATION

UNIVERSITY COLLEGE. The minimum scholarship index to remain in good academic standing in the University College is 1.40 through the semester or summer session in which a student has equaled or exceeded the limit of 30 hours attempted. Thereafter the minimum scholarship index required shall be 1.70. Students are placed on academic probation at the end of any semester or summer session in the University College if their scholarship index falls below the applicable minimum indicated above.

DEGREE-GRANTING COLLEGES AND NON-DEGREE STATUS. Students in degree-granting colleges or in non-degree status are in good academic standing if their academic records show either: (1) a scholarship index (as defined in this catalog) of 2.0 or better, or (2) a grade-point average of 2.0 or better on all work taken while enrolled in a degree-granting college or in non-degree status. Students will be placed on academic probation at the end of any semester or summer session when their academic record fails to equal one of the two minimums set out above.

SUSPENSION

UNIVERSITY COLLEGE. Students are subject to suspension at the end of any semester or summer session in which they were carried on academic probation as defined above, unless they have succeeded in removing themselves from such probation by acquiring the minimum scholarship index. No students, however, are subject to suspension or dismissal because of their scholarship index until the end of the semester or summer session in which the cumulative number of hours attempted exceeds 16.

DEGREE-GRANTING COLLEGES AND NON-DEGREE STATUS. Students in degree-granting colleges or in non-degree status are subject to suspension at the end of any semester in which they were carried on academic probation unless they have succeeded in removing themselves from such probation by that time. Students are encouraged to familiarize themselves with the academic regulations of their specific school or college.

Students who have been suspended are not eligible to reenter for a period of one calendar year from the date of suspension. The readmission of suspended students to the University after the expiration of the suspension period is contingent upon the approval of the deans or directors of the colleges to which such students are seeking admission or readmission. Students suspended for poor scholarship or who, after having been placed on probation, fail to reregister for the following semester shall be considered as on probation upon their return to the University. The same regulation applies to students who withdraw from the University while on probation (unless their withdrawal grades make them subject to suspension). A dean may require a student who is on probation at the time of registration to enroll for the minimum number of hours and may at any time require a student on probation to drop as many hours as seem to be in excess of the student's ability.

Regulations on probation and suspension as described above apply only at the end of a semester or summer session. However, during the progress of any semester or summer session the dean of a college may refer the case of a delinquent student to a college committee on scholarship; such committee may recommend to the dean probation or suspension from the University for the student.

Attention is called also to the possibility of suspension as a result of excessive absences (see below).

THE UNIVERSITY OF NEW MEXICO

DATE: 9-12-77

TO: All Members of the UNM Faculty

FROM: Admissions and Records

SUBJECT: Final Examinations, Page 29 of the 1977-79 University Catalog

Dean Nathaniel Wollman of the College of Arts and Sciences has asked us to correct an inadvertent error of omission on the above page of the new Catalog under the heading Examinations, sub-head Regular Examinations. In the first sentence, a comma was mistakenly dropped after the word "semester" and before the word "and". This is important to note because the meaning of the final examination policy hinges upon the placement of the comma.

The statement should read, "Examinations in each course are held at the close of each semester, and at intervals during the semester at the discretion of the instructor." All students, including graduating seniors, are required to take semester final examinations.

/bc

John Durrie
Secretary of the University
/Scholes 226

ATTENDANCE

Students are required to attend all meetings of the classes in which they are enrolled unless excused by the instructor. No extensions of the vacation periods are given to any students, regardless of the location of their homes. Nonattendance at classes due to late registration is considered the same as absence incurred 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 the grade of F, upon recommendation of the instructor.

Absences due to illness, field trips, athletic trips, etc., are to be reported by the student to the instructor and to the Dean of Students. Such report does not relieve the student of responsibility for lost work. It is the duty 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 is automatically notified. If a student has been ill and needs verification, notify the Dean of Students Office, extension 3361. It is expected that professors will normally indicate at the beginning of a semester whether the student will need verification of this nature from the Dean of Students Office.

Students who are absent and unexcused from final examinations or other closing exercises of the classes in which they are enrolled shall be given the grade of F.

DISHONESTY IN ACADEMIC MATTERS

Every student is expected to abide by the highest standards of honorable conduct in academic matters. Dishonest action in connection with tests, quizzes, 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 CREDIT

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" level of transcript requests per student. Requests judged to exceed that number will be assessed a fee of **25 cents** per page. A student may be issued without charge a maximum of one transcript for his personal use during a year of his enrollment in the University. Transcripts of record cannot be issued until all financial obligations to the University have been satisfied.

EXAMINATIONS

REGULAR EXAMINATIONS. Examinations in each course are held at the close of each semester and at intervals during the semester at the discretion of the instructor. All students, including graduating seniors, are required to take semester final examinations.

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 approval, take an examination to establish or validate credit in courses appearing in the University's general catalog (examinations to establish credit will not be provided in nonprofessional physical education activity courses) and 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 undergraduate credit can be earned in this manner. An interview with the department concerned is required. Upon recommendation of the department chairman and approval by the dean or director of their colleges, the students secure from their college office a permit for the examination, pay in advance the required fee of $2.50 per credit hour, and present the receipted permit to the department as authorization to take the examination. Credit will be allowed and placed on the student's permanent record only if a grade of C or better is earned. 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 may count toward graduation and residence requirements.

OTHER SPECIAL EXAMINATIONS. For information concerning the Advanced Placement Program and the College Level Examination Program of the College Entrance Examination Board, see "Undergraduate Program Testing Battery." See degree requirements in "Admission and Registration."

DEGREE REQUIREMENTS

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

1. A **minimum** of 128 semester hours of earned and acceptable credits.
2. A cumulative scholarship index of 2.0 or a 2.0 grade-point average on the last 128 semester hours of degree work.
3. Residence credit requirement: A minimum of 30 semester hours of credit earned at The University of New Mexico **exclusive** of extension and correspondence (independent study) credit, 15 semester hours of which must be earned after the candidate has accumulated 92 hours of earned semester hour credit. In no case is the number of hours specified to be earned after the student has completed 92 semester hours in the degree program to be interpreted as necessarily the last hours.

   A student may fulfill part or the whole of this residence requirement by summer session attendance.

   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.
4. A **maximum** of 24 semester hours of CR/NC credit grading option courses can be applied toward a bachelor's degree.
5. A **maximum** of 40 semester hours of extension and correspondence (independent study) credit can be applied toward a bachelor's degree and no more than 30 of this number can be correspondence credit.
6. Residence requirements in major and minor: At least one-half of the minimum number of credit hours required for major study and one-fourth of the minimum number of credit hours required for minor study must be class or laboratory work earned in residence in the University. When a senior transfer student plans to complete a major by presenting credit hours earned in residence at another institution, the major department or the director of the interdepartmental major may modify this ruling, not, however, below one-fourth of the total minimum hours required for the major (or the interdepartmental major).
7. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the college offices early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the college offices.

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

Candidates for **any** associate degree offered by any of the colleges of the University must meet several all-University minimum degree requirements. Also the candidate is subject to several all-University limitations. These are:

1. A minimum of 60 semester hours of earned and acceptable credit, 30 of which must be University of New Mexico credit.
2. A cumulative scholarship index of 2.0.
3. A minimum of 6 semester hours earned in residence on campus or at a University of New Mexico branch.
4. A maximum of 9 semester hours may be earned by independent study (correspondence).

CATALOG REQUIREMENTS. Students may graduate under the catalog requirements for the year in which they were enrolled for the first time in the degree-granting college of The University of New Mexico from which they are seeking a degree, provided they complete graduation requirements within a continuous six-year period. If students interrupt attendance or transfer from one degree-granting college to another within the University, they must graduate under the catalog in effect at the time of their readmission or transfer.

THE STUDENT IS SOLELY RESPONSIBLE FOR KNOWING THE RULES AND REGULATIONS CONCERNING GRADUATION REQUIREMENTS AND FOR REGISTERING IN THE COURSES NECESSARY TO MEET SPECIFICATIONS FOR THE DEGREE.

TWO UNDERGRADUATE DEGREES. Two undergraduate degrees may not be granted a student until he 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) and has fulfilled all requirements for both degrees, including residence credit requirements. A transferring graduate should notify the Dean of Admissions and Records when applying for admission if he plans to work for 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.

EXTENSION AND INDEPENDENT STUDY CREDIT HOURS ALLOWED TOWARD DEGREE

Credit is allowed for independent study and extension courses completed at this University or through other colleges and universities

accredited by regional accrediting associations. Credit for extension and independent study courses completed in 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 the University has the privilege of establishing credit here under the regulations governing special examinations to establish or validate credit. The hours earned by independent study or extension from accredited institutions other than The University of New Mexico may be counted toward degree requirements, but the grades will not be included in the grade-point average of the student. (See "Scholarship Index.") Courses taken from other institutions must correspond to those offered at The University of New Mexico.

Any graduating seniors not in residence who expect to offer credits earned by independent study toward fulfillment of degree requirements must have prior approval of the dean of their college. 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 spring semester. 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. Attendance is optional.

HONORS WORK AND GRADUATION WITH HONORS

It is possible for students to graduate with General Honors (honors in General Studies), or with Departmental Honors, or with both. The designations for the various levels of honors in General Studies are as follows: **cum laude** in General Studies, **magna cum laude** in General Studies, **summa cum laude** in General Studies. The students become candidates for honors only; the level of honors with which they are graduated is determined by the General Honors Council. Designations for graduation with Departmental Honors are as follows: **cum laude, magna cum laude,** and **summa cum laude.** In Departmental Honors also the students are candidates for honors and the level of Departmental Honors with which they graduate is determined by their department (or college, in colleges which are not departmentalized).

Graduation with honors, either general or departmental, is in no sense automatic. The students are required to make application for candidacy. Information regarding honors in General Studies and the method of gaining admission to this program can be obtained in the office of the Director of General Honors.

Information regarding the Honors Program in a specific department or college can be obtained in the main departmental or college office.

THE GENERAL HONORS PROGRAM. The General Honors Program, which may lead to graduation with honors in General Studies, is available to any undergraduate student who wants to engage in a challenging intellectual program with an emphasis on interdisciplinary and educationally broadening activity. The program offers small, seminar-type courses in a variety of styles, and students have an opportunity to study and work with other interested and interesting students from various departments. Emphasis is on discussion and student participation, with opportunities for self-expression in a variety of ways. There are opportunities for individual study and informal activities, and students have a major voice in planning the course offerings and the structure of the program.

The core courses in the program (Gen St 301, 302, 403, 404—see p. 173) are taken in the junior and senior years. A good time to join the program is as a second-semester sophomore or as a junior. Part of the course requirement (see below) can be fulfilled with Gen St 111, 112, 211, or 212 (Freshman or Sophomore General Studies Seminars—see p. 173) or with one-credit-hour courses in the Undergraduate Seminar Program (see below), which may be taken at any time in the student's undergraduate years. For freshmen and sophomores who are interested in the General Honors Program, these courses provide a good way of keeping in touch. Freshmen who are Presidential Scholars and other academically well-prepared students may take Freshman General Honors Seminars (Gen St 121, 122—see "General Honors Program" in the Courses of Instruction section of this catalog).

The formal requirements for graduation with honors in General Studies are:

1. Completion of 9 credit hours in courses Gen St 301, 302, 403, 404 (normally six hours from 301 and 302 and three hours of either 403 or 404), the selection to be approved by the director of the program.
2. Completion of at least an additional 6 credit hours in any General Studies courses or Undergraduate Seminar Program courses.
3. A 3.2 overall scholarship index.
4. Certification by the General Honors Council.

Performance in the program is not judged by mechanical quantitative standards. The student is under guidance in small groups by a variety of faculty members who make detailed evaluations of students' work. (These evaluations are available to the student but are confidential in the sense that they are available only to the instructor, the individual student, the director of the program, the administrative assistant, and the General Honors Council. Students are invited to discuss the evaluations with their instructors and to add any comments they would like to.) Completion of the quantitative course requirement does not guarantee graduation with honors; a high level of achievement is required. The program is designed to offer students an opportunity; the student is expected to respond with energy, imagination, and conscientiousness.

To minimize the destructive aspects of grading, the following system is used: A (Honors) is computed in the scholarship index in the normal way; CR (Credit) gives credit for the course but this credit is not computed in the scholarship index; NC (No Credit) neither gives credit nor is computed in the scholarship index. Students are rewarded for excellent work but are not penalized if they do not perform at the highest level. Taking courses with this grading system does not interfere with a student's being able to take one course per semester under the Credit/No Credit grade option (see "General Honors Program" in the Courses of Instruction section of this catalog).

Special advising and counseling by staff, faculty, and students are available to students in the General Honors Program and the Undergraduate Seminar Program. For information on this and all aspects of the program go to the Honors Center.

Students in the General Honors Program may also undertake Departmental Honors.

THE UNDERGRADUATE SEMINAR PROGRAM. Each semester about twenty one-credit-hour seminars are offered on topics or activities of general interest. They are selected from proposals made by students and by faculty members. The subject matter is generally interdisciplinary, or at least such that the course would not be offered by a regular department. Classes are normally limited to fifteen students and the emphasis is on discussion and active student participation. There are no prerequisites; the seminars are **open to all undergraduate students.** They are not honors courses, but they can be used to fulfill part of the course requirement for students in the General Honors Program (see above).

As in General Studies courses, grading is normally on the A/CR/NC system (see above). Occasionally, when the instructor feels that it is more appropriate, grading is CR/NC only.

THE DEPARTMENTAL HONORS PROGRAM. A 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. Candidates for a B.U.S. degree may be candidates for graduation with Departmental Honors if they meet the requirements for the major and for the Departmental Honors program in a certain department.

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 chairman 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 chairman 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 candidate will be graduated are both at the discretion of the department.

GRADUATION WITH DISTINCTION

Students graduating from The University of New Mexico who have completed a minimum of 60 hours in residence and who have a scholarship index of 3.5 or better for all work completed at this University will receive the degree "With Distinction." Any questions concerning eligibility which might arise in unusual circumstances will be reviewed and decided by the Admissions and Registration Committee.

UNIVERSITY COLLEGE

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

UNIVERSITY COLLEGE

All freshmen and many sophomores of the University are enrolled in the University College. The **fundamental purpose** of the College is to provide a maximum opportunity for each student to create an individualized program of studies best suited to his or her particular needs, interests, and aptitudes. If you are enrolled in the University College, you may select from the large number of courses offered by the academic departments at UNM. And, if you are undecided about a major field of study or desire to change your academic major, you may select the appropriate courses with a minimum of restrictions.

A major function of the College is academic advisement. University College maintains an Advisement Center and also coordinates the work of the eight other college advisement centers. These centers are generally open year-round; interested students are asked to call for an appointment. New UNM undergraduate students are required to meet with an adviser prior to registration for their first semester. The College also provides each new freshman with an individualized Freshman Advisement Resource Sheet.

If you HAVE chosen an academic major, then consider the program of studies recommended by that particular degree-granting college of the University. These programs are described in the catalog and in the orientation literature. You should then seek academic advice in the advisement center of that particular college.

If you have NOT chosen a field of study, you are encouraged to develop a first-year program of studies that will help you discover areas in which you have interest and special competence; the orientation literature suggests several procedures. You should then seek advisement from the University College advisers.

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

If you do not seek a four-year degree program, the University offers a variety of two-year programs leading either to a two-year degree or to a certificate of completion.

A **second** major function of the University College is frequent communication with you regarding your academic record and its implications. To this end the College engages in several specific practices: (1) your academic record is maintained by the staff and is available for your examination at any time; (2) periodically you will be sent letters and notices informing you of particular circumstances; (3) special advisers on the staff of the College are available for your use. They are knowledgeable in academic policies and procedures and possess particular competence in dealing with your individual problems. These and other services are provided to you if you wish to avail yourself of them. However, it must be stressed that YOU ARE SOLELY RESPONSIBLE FOR MEETING ALL REQUIREMENTS FOR TRANSFER TO, AND EVENTUAL GRADUATION FROM, A DEGREE PROGRAM.

A **third** major activity of the University College is research investigation regarding UNM student characteristics. The University College staff has long been active in seeking to describe and analyze patterns of student enrollment and retention at UNM, the patterns of educational choice, and the relationships between student aptitude, interests, and academic achievement. In recent years there has been an intensification of this research function, particularly in cooperation with the Testing Division.

ADMISSION REQUIREMENTS

For admission requirements to the University College, see the Admission and Registration section of this catalog. The University College will not 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 will not be permitted to reenroll in the University College if at the end of your previous semester or term of enrollment you had attempted a total of 72 or more semester hours. Attempted hours, for purposes of University College eligibility, include all hours of work 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 reenroll in the University College if at the end of your previous semester or term of enrollment you had earned a total of 64 or more semester hours. Earned hours, for purposes of University College eligibility, are defined as all semester hours of credit accepted toward a degree whether earned at UNM or any other institution of higher learning, including accepted military 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 can be 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 your 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.

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 scholarship 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.
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

Transfer to a degree-granting college is effective only at the close of a semester or summer session. File a transfer petition in the University College office during the semester, preferably early in the semester. This petition is your declaration of intention as to which degree program you wish to enter. A determination of your eligibility to transfer to that program will be made at the time the final grades are reported to this office and in light of the requirements for admission as specified by THAT degree-granting college. In the event you do not qualify for transfer the petition is invalidated, and you will need to file another petition in a subsequent semester or summer 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 college work with a passing grade, of which at least 30 hours have been earned in The University of New Mexico with 15 of these 30 hours earned in the University College of The University of New Mexico; 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 and is administered through the University College. This program was initiated in April 1969.

The fundamental purpose of the degree program is to permit a student to assume the responsibility for developing an individualized baccalaureate program of studies designed to meet his or her particular needs. If you select this degree program you will find that it 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. You also may structure a program of studies so that the sequence and combination of courses reflect either specialized or broad patterns of educational experience, depending upon your preference. This program is not intended for the undecided student.

Strict compliance with degree program scholarship requirements is mandatory for entrance and continuation in the program. An entrance interview is required. The interview is informational in nature and is not utilized to restrict entrance to the program. The advisement of students is provided by the special advisers of University College. As a student in the Bachelor of University Studies program you are responsible for complying with the general academic regulations of this University specified for the degree-granting colleges. If you have questions regarding any aspect of the program please address them to the Dean of the University College.

ADMISSION

All freshman 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.
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 30. (See definition of scholarship index in this catalog).
3. An informational interview prior to transfer.

TRANSFER FROM OTHER COLLEGES IN THIS UNIVERSITY

Transfer to the Bachelor of University Studies program from a degree-granting college of The University of New Mexico requires a scholarship index of 2.0. You may petition to transfer at any time. Admission will be granted following an informational interview if you meet the above requirement.

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS

If you seek transfer into the Bachelor of University Studies program from another institution, you must meet the University's general qualitative admission requirements for transfer and present a minimum of 26 transferable semester hours of credit. All transfer work acceptable to the Admissions Office of the University is acceptable in this program. The required informational interview must be held no later than the end of the fourth week of the initial semester in the program.

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 clerk 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. No academic dividends or penalties are given in the Bachelor of University Studies program.

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.
2. A minimum scholarship index of 2.0 on all work attempted at The University of New Mexico.
3. A minimum of 40 semester hours earned in courses at the upper division level.
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 Bachelor of University Studies program, a minimum of one complete session of enrollment on the main campus of The University of New Mexico (semester or summer session).
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.
8. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the college offices early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the college offices.

ASSOCIATE OF SCIENCE DEGREE IN LABORATORY TECHNOLOGY

This two-year program prepares the medical laboratory technician to perform laboratory procedures which aid the physician and pathologist in the diagnosis and treatment of disease in the hospital, clinic, or private laboratory. The medical laboratory technician will usually work under the supervision of graduate medical technologists or other personnel with advanced training in the medical laboratory profession.

The curriculum includes a comprehensive selection of academic subjects to provide a sound structure for the cultural, social, and scientific development of the student. Formal instruction and clinical experience in the medical laboratory sciences complete the training of the medical laboratory technician to meet his/her responsibilities as an important member of the health service team.

Professional direction and administration of the course will be provided by the Laboratory Sciences Division, Allied Health Sciences Center, UNM School of Medicine.

ADMISSION

The total class enrollment in the Medical Laboratory Technician Program is limited to ten. Students are admitted only in the fall semester of each year and will be considered only after completion of the first year curriculum.

Requirements for admission:

1. Completion of all courses designated in the first year curriculum. A minimum GPA of 2.0 in all courses with a grade of C or better in chemistry and biology courses.
2. Application must be submitted to the Laboratory Sciences MLT Selection Committee, 1001 Stanford NE, by January 10. Only those students who will have completed the first-year curriculum prior to fall semester matriculation will be considered for admittance.
3. Selection by the committee is based on scholastic ability, personal interview, and aptitude.
4. All applicants will be contacted to arrange for an interview with the selection committee following receipt of application and credentials.
5. Final selection will be made on receipt of final transcripts for the first-year curriculum.

CURRICULUM

FIRST YEAR

Fall Semester

Engl 101 Wrtg w/Rdgs in Expos	3
Math 121 College Alg or 150, 162	3-4
Chem 121L Gen Chem	4
Biol 121L Principles of	4
	14-15

Spring Semester

Engl 102 Wrtg w/Rdgs in Lit	3
Chem 112 Org & Biochem	4
Soc 101 Intro to	3
Biol 239 Hlth Sci Micro	4
Md Lab 100 Med Lab Science (Intro)	1
	15

SECOND YEAR

Fall Semester

Biol 136 Human Anat & Physiol	3
Humanities elective	3
Elective	3
Md Lab 101 Clin Urinalysis	2
Md Lab 103 Pract Urinalysis	1
Md Lab 102 Clin Serology	2
Md Lab 104 Pract Serology	1
	15

Spring Semester

Md Lab 201 Clin Chem I	5
Md Lab 202 Clin Hematology I	4
Md Lab 203 Clin Microbiol I	5
Md Lab 204 Immunohemat	2
	16

Fall Session (July-Nov)

Md Lab 251 Pract Clinical Chem I	4
Md Lab 252 Pract Clin Hematology	3
Md Lab 253 Pract Clin Microbiol I	3
Md Lab 254 Pract Clin Immunohemat I	2
	12

DEGREE REQUIREMENTS

The candidate for the degree of Associate of Science in Laboratory Technology must:

1. Complete all work outlined in the curriculum for medical laboratory technicians.
2. Maintain a grade average of at least 2.0 in the college-level work attempted and a grade of C or better in all chemistry, biology and Med Lab courses.
3. Satisfactorily complete prescribed program at affiliated hospitals.
4. Be recommended by the full-time faculty of the Laboratory Sciences Program, UNM School of Medicine.

QUALIFYING TO PRACTICE

Upon successful completion of the prescribed curriculum, the University confers the Associate of Science in Laboratory Technology degree. The graduate will be eligible and expected to write the National Examination for Medical Laboratory Technicians of the Board of Registry, American Society of Clinical Pathologists.

ADVANCEMENT

Students who anticipate further study toward a bachelor's degree in medical technology should seek special counseling in the Laboratory Sciences program.

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 managerial and supervisory responsibility.

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 Wrtg w/Rdgs in Lit	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	3
§Electives	4
	15

Second Semester

Bus Ed 257 Secretarial Admin	3
Bus Ed 265 Bus Communications	3
B&AS 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 the 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 education courses may be taken for credit.

THE COLLEGE ENGLISH TUTORIAL PROGRAM

This Engl 101, 102 option provides a special service to those of you who need extra help with college-level English and study skills during your first year at the University. It is especially recommended if you score 14 or below on the ACT English examination, or if you feel that college study will pose special difficulties for you because of a poor background in English or other educational disadvantages. Classes are composed of only six students, meet five hours a week, and give tutorial help in certain coordinated outside courses as well as English. The purpose of the program is to insure a successful first year for those of you who might otherwise fail due to inadequate skills for university study. Full credit is given for Engl 101 or Engl 102. There is no fee for the program. Admission is voluntary, but the number admitted is limited.

For information, contact the College English Tutorial Program, University College Building, Room 12, or telephone 277-2631. Applications should be submitted early.

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 Admissions 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.

§See business education adviser.

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.

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 deal with the complexities of social values, historical context, political, economic, psychological, cultural, and technological factors in order to positively affect the built environment. These skills can produce building complexes, new and renewed communities, plans and planning processes, policy proposals for urban centers and regions, and new knowledge based on careful research.

Upon graduation a student should: (a) be able to work effectively on environmental design problems within the real-world constraints of our changing society, (b) be able to formulate concepts of better environments, beyond present-day constraints, and understand how such needed changes may be brought about, and (c) have the widest possible array of career choices known and accessible.

The School offers these special qualities:

1. A multidisciplinary education adaptable to individual interests, abilities, motivation, and the opportunity to develop a personal curriculum.
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 the education of disadvantaged groups.

CURRICULUM IN ARCHITECTURE

The six-year professional program in architecture consists of a four-year undergraduate program leading to a Bachelor of Arts in Architecture and a two-year program leading to the degree of Master of Architecture.

The undergraduate program provides a broad education with concentration on the basic knowledge and skills required to solve the problems of the physical environment. Curriculum options provide flexibility for those students wishing to terminate their studies at this point and enter related fields or a concentrated preprofessional program aimed at architectural practice, planning, or environmental design.

The graduate program allows the student to specialize in a specific field so that the student can practice that specialty as a professional or pursue his or her interest through research and postgraduate study.

PROGRAM EMPHASES

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 method, process, and the development of a product—be it a building design or a research document.

URBAN PLANNING. This emphasis is appropriate for those students who are interested in a scale of design and policy matters larger than those typically associated with a single building or small complex. The emphasis ranges from local community development processes to facility planning and regional land use. Case study examples are typically drawn from the New Mexico setting. Students must select their own areas of subject concentration, consistent with available course offerings and faculty resources.

ENVIRONMENTAL DESIGN. This emphasis deals with the human/environment interface, a newly emerging area of interest. The interaction is considered at the macro scale, e.g., the environmental impact of development processes upon land, water, and air quality and upon society as a whole. It is also considered at the micro scale, e.g., the interaction between human behavior and the built environment. The range of studies depends upon the individual student's interest. Courses are concerned with the relationship between environment and behavior, with developing skills in environmental impact analysis, and with research approaches and techniques in these fields—all aiming toward better-informed design and planning decisions.

ADVISEMENT

Students are required to select one program emphasis and to design a personal curriculum within the required course groupings. However, this freedom must be conditioned by faculty/student communication. Each student will be assigned (or can select) a faculty adviser to aid in the design of a curriculum plan which must be jointly agreed to and kept current in the student's file.

ADMISSION PROCEDURES

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 Admissions Office. 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 credited hours.
3. Demonstration of competency in English by receiving a score of 20 or higher on the American Testing Exam (ACT) or its equivalent
4. A grade of B or better in any of the School's architectural introductory courses (101, 103, 104, 165, 181) or demonstration of comparable ability.
5. Submission of a **letter of intent,** indicating which of the three program emphases (architecture, urban 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 committee on admissions.
8. Submission of all material by March 1 for the fall semester.

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.

For further information, please write: Admissions, School of Architecture and Planning, 2414 Central Ave. SE, Albuquerque, New Mexico 87106. Telephone: 277-2903.

GRADUATION REQUIREMENTS

A Bachelor of Arts in Architecture is granted upon satisfying all general University degree requirements, including completion of the Undergraduate Program Test Battery, the aptitude test, and an advanced or field test during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office. 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. A concentration of no less than 18 hours within some single department outside the major must be included. The following groupings must be achieved:

70 HOURS IN THE MAJOR

49 Architecture
6 Art Studio
6 History of Architecture
9 Civil Engineering

58 ADDITIONAL HOURS

30 College of Arts and Sciences (of which 3 must be mathematics, above but not including Math 121, and 3 in physics)
18 Outside the major
10 Miscellaneous (can be in or outside the major)

(Of the above, 18 must be concentrated in one department other than Architecture and Planning)

Courses taken in the General Honors Program or the Undergraduate Seminar Program will be accepted in any of the above categories.

ADDITIONAL REQUIREMENTS. 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 drop that student from the School of Architecture and Planning. Students who plan to enter the Graduate School 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 the graduate program.

SUGGESTED INTRODUCTORY COURSES: Arch 101, 103, 104,* 165, 181; Math 150, 162, or 180; Physics 102, 160; Art 102, 123, 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 and complimentary learning opportunity. Students may initiate special seminars by gaining faculty approval eight weeks before preregistration.

PROBLEMS. 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.

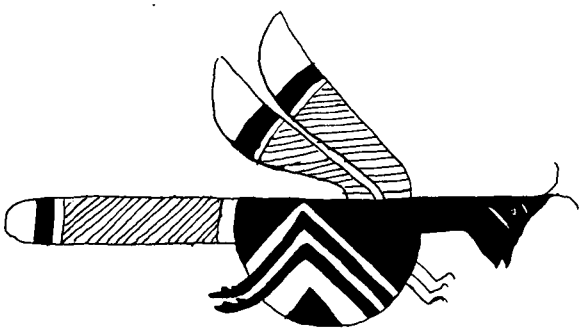
INTERNSHIP. Arch 430: An opportunity to earn from 1-4 credits while getting actual experience with an employer such as an architect, planning agency, engineer, or building contractor. Approved by the faculty responsible for this course.

DESIGN AND PLANNING ASSISTANCE CENTER (DPAC). Arch 498: Through the DPAC the 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.

A 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.

LICENSING FOR ARCHITECTS IN THE STATE OF NEW MEXICO. Graduates of the architectural program with a master's degree in 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.

*Prerequisite for Arch 201.



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. 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 of the ACT.
   (c) A score of 552 or better on the verbal portion of the SAT.
   (d) A score of 45 or better on the English Composition Test of the CLEP.
   (e) A passing score on the Michigan Test (for foreign students only).
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.

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 one semester, students who have not passed the Communications Skills Test will be disenrolled.

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. 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 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. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.
8. Demonstration of competence in the writing of English.

Students who have not been in continuous attendance must follow the requirements of the current catalog upon reenrollment.

GROUP REQUIREMENTS

The purpose of the following group requirements is to insure that students will explore various fields of knowledge before beginning to concentrate too heavily in their major fields.

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.

II. **HUMANITIES:** 9 credit hours (not more than 6 from any one area) in literature, including foreign and comparative literature, history, or philosophy.

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 109, 110, 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) in economics, geography, political science, or sociology (not acceptable are Political Science 250, 309, 350, 352, 465, 478, and 499 and Sociology 280, 281, 338, 339, 478, 480, 481L, 485, 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 courses: French 202, German 202, Navajo 202, Greek 302, Italian 276, Latin 202, Portuguese 276, Russian 202, Spanish 202, 212, or 276, Swahili 202, Chinese 202.

VIII. **FINE ARTS:** 6 credit hours. Acceptable courses are: Art History 101, 130, 201, or 202; Fine Arts 151; Music 139, 140, 371, 372; Theatre Arts 101, 115, 116, 210, 327, and 328; Dance 262 and 263. 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 semester of a laboratory in one of the sciences (Group III or IV) is required, making a minimum of 7 credit hours in either group.
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 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 designated 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 chairman if a distributed minor is desired.

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 beyond 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.

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 School of Business and Administrative Sciences 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 B&AS minor in the fourth year, and the M.B.A. in the fifth year. Requirements for the B&AS minor and M.B.A. are outlined in the Business and Administrative Sciences section of this catalog.

ELECTIVE COURSES ACCEPTABLE AND UNACCEPTABLE

Acceptable

Most courses taught in other colleges including:

1. Up to 6 hours of shorthand.
2. Up to 4 hours of ensemble music.
3. Up to 4 hours of PE activity.
4. Eight hours of dance (not including Dance 262 or 263) may be taken in lieu of PE activity and ensemble music; no combination may exceed a total of eight hours.
5. Up to 3 hours of shop.
6. Up to 7 hours to be chosen from Health Ed 164, 171, 212, Professional PE 377, 378, 399, 466, 489, Recrea 175, 452, 480.
7. Up to 12 hours in courses in methods of high school teaching, provided these courses are required for certification in a single or composite field.
8. Up to 4 hours in USP courses.

Unacceptable

1. Courses in typing, office machines, and filing.
2. Courses in health, professional PE, and recreation in excess of 7 hours or courses taken other than those listed as acceptable in Item 6 above.
3. Courses in elementary education, nursing, and pharmacy which are primarily vocational or directed toward professional practice.
4. Vocational or technical courses in the Associate of Arts, Associate of Science, or similar courses in nursing, pharmacy, dentistry, and medicine.
5. Courses taken in a school of law or medicine to be used for degrees in law or medicine.

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 INSTRUCTION

A student may not elect both a major and minor outside the college.

Major in A&S	Minor in A&S
Anthropology (BA)	Anthropology
	American Studies
	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-Philosophy (BA)	
Geography (BA)	Geography
Geology (BA or BS)	Geology
History (BA)	History
Journalism (BA)	Journalism
Latin American Studies (BA)	Latin American Studies
Languages (BAs): French	French
German	German
	Greek
	Latin
Portuguese	Portuguese
	Russian
Spanish	Spanish
Mathematics (BS)	Mathematics
	Paleoecology
Philosophy (BA)	Philosophy
Physics (BS)	Physics
Political Science (BA)	Political Science
Psychology (BA or BS)	Psychology
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.

Art (BA)	Art
	Business & Administrative Sciences
	Computing & Information 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.

PREPROFESSIONAL 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.

Professional advisers:

Forestry—Dr. William C. Martin, Department of Biology
Medicine and Dentistry—Departments of Biology and Chemistry
Medical Technology—Department of Biology and School of Medicine

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.

LATIN AMERICAN CENTER

Marshall R. Nason, Professor of Modern Languages, Director.

The Latin American Center is an administrative unit of the College of Arts and Sciences and the Graduate School. Its purpose is to coordinate academic work in the Latin American field; it does not offer degree programs or courses directly.

Students interested in a program related to Latin America should consult catalog listings in Division of Inter-American Affairs, Ibero-American Studies, history, modern and classical languages, anthropology, architecture, art history, business and administrative sciences, economics, education, political science, and sociology.

The Latin American Center directs the overseas study program at the Andean Study and Research Center at Quito, Ecuador.

DIVISION OF INTER-AMERICAN AFFAIRS

This administrative unit of the College of Arts and Sciences and the Graduate School offers the B.A. and M.A. in Latin American Studies.

Equal emphasis is given to language study and social sciences. Proficiency in Spanish and a reading knowledge of Portuguese are required for a major in Latin American Studies. Degree requirements are found under "Latin American Studies."

ANDEAN STUDY AND RESEARCH CENTER, QUITO, ECUADOR

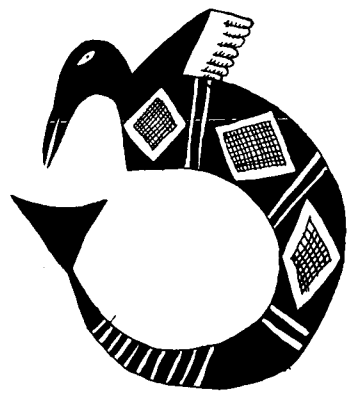
The Center provides advanced and graduate study in Latin American language and studies and the opportunity for overseas work, study, and research. The Center is also a research base for faculty and graduate degree candidates.

The Center is a fully accredited program, providing cross-cultural exposure and the opportunity to increase language skills. The study plan emphasizes the geographical location advantages by allowing students to work with host-country specialists and to observe the very diverse region which constitutes a microcosm of Latin America.

The cost of study at the Center is close to costs of a UNM student living in campus residence halls. The Center is independent of both Quito universities, but close enough to allow students to attend classes at either. Students usually reside with Ecuadorian families.

Latin American history, languages, and literature are standard components of the program; courses in other fields vary from semester to semester. Efforts are made to supply preprofessional training in such fields as journalism and education. The Center is staffed by a director from UNM, an Ecuadorian associate director, and a binational teaching staff of UNM faculty and Ecuadorian specialists. Additional information on curriculum can be obtained from the director, Latin American Center.

Enrollment is open to juniors, seniors, and graduate students of UNM or to students eligible for admission to UNM, provided they have sufficient skill to do classroom work in Spanish and have completed the normal requisites for upper division work. Preregistration and fee payments are completed before departure for Quito. Interested students can get additional information from the Latin American Center regarding financial arrangements. Some scholarships and work-study assistance are available through ASUNM and the Student Aids Office, respectively.



THE ROBERT O. ANDERSON SCHOOL OF BUSINESS AND ADMINISTRATIVE SCIENCES

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:

- General management
- Accounting
- Management information systems
- Financial management
- Human resources management
- Economics and environment*
- Marketing management
- International management
- Management science
- Health systems management*

DEGREES OFFERED

The Robert O. Anderson School of Business and Administrative Sciences offers the degree of Bachelor of Business Administration. The Robert O. Anderson Graduate School of Business and Administrative Sciences offers three degrees: the Master of Business Administration, the Master of Management, and a Ph.D. concentrating in International Management with an emphasis on Latin America.

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 business 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 business and the administrative sciences. The second group consists of elective courses of the student's own choosing.

The program provides the opportunity for concentrations in accounting, management information systems, financial management, international management, management science, marketing management, human resources management, and general 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 Business and Administrative Sciences.**

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 to five years of managerial experience and who retain full job responsibilities while enrolled. Additional information is available in the separate **Master of Management Program Brochure** and from the office of the Director of Executive Programs.

DOCTOR OF PHILOSOPHY

The Ph.D. degree program concentrating, in international management with a special emphasis on Latin America, is described in the Graduate Bulletin of the University and in the **Bulletin of the Robert O. Anderson Graduate School of Business and Administrative Sciences.** Outstanding performance in the M.B.A. degree program or its equivalent (or other acceptable master's degree level accomplishments) is a prerequisite. Prior to the dissertation stage, this program normally requires two calendar years of intensive interdisciplinary studies and written and oral examinations, as well as the development of capability in Spanish (or Portuguese). Additional information is available from the Director of the Doctoral Program.

SCHOLASTIC REGULATIONS

The student should become familiar with the general academic and scholastic rules 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. Business and administrative sciences courses taken out of sequence cannot be used to fulfill the degree requirements of the School regardless of the grades earned in such courses.

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 as a person 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 electives 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 business and administrative sciences 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: (a) satisfy prerequisites and (b) have the consent of the instructor and the Director of Student Affairs of the Anderson School.

All freshman students are admitted to the University College. A detailed statement of admission requirements for that college is contained in the Admission and Registration section of this catalog.

ADMISSION FROM 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." If a C or higher is not achieved in each course, the student must have a 2.3 index for these specific requirements.
4. Satisfactory competence in written communications as evidenced by passing the Communications Skills Test or achieving a score of 25 or higher on the English portion of the ACT.† Effective communications (both oral and written) are essential for satisfactory performance in 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; modern languages; philosophy; speech communication) 9 hours

*Career preparation in economics and environment and health systems management is offered only at the graduate level.

†This requirement will be effective for all students admitted to the Anderson School for the fall semester, 1978, and thereafter.

(2) Social sciences (anthropology, geography, history, political science)	9 hours
(3) Laboratory science (biology, chemistry, geology, physics)	4 hours
b. Specific requirements: A grade of C or higher in each of the courses listed under "Specific Requirements." If a C or higher is not achieved in each course, the student must have a 2.3 index for these specific requirements. These courses are prerequisites for all 300- and 400-level courses in the Anderson School.	
(1) Math 121 and 180 (or the equivalent)	6 hours
(2) Econ 200, 201	6 hours
(3) Behavioral sciences—either Psych 102 and a second-year or higher psychology course or Soc 101 and a second-year or higher sociology course	6 hours
(4) Statistics—Math 102, B&AS 290L	4 hours
(5) Computer science—CIS 150 (or the equivalent)	3 hours
(6) Introduction to accounting—B&AS 202‡	3 hours
c. Electives	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

CIS 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

Math 102 Probability & Stat	3
B&AS 290L Business Stat Lab	1
B&AS 202 Intro to Acct	3
Social science elective	6
Elective	3
	16

JUNIOR AND SENIOR YEARS

Suggested programs for the junior and senior years for each concentration are available from the office of the Director of Student Affairs at the School.

APPLICATION FOR ADMISSION FROM UNIVERSITY COLLEGE

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 than the twelfth week of the semester in which they will complete the requirements for admission.

TRANSFER FROM OTHER COLLEGES IN THIS UNIVERSITY

Students seeking to transfer from other degree-granting colleges of the University must present at least 62 semester hours of acceptable credit with a grade-point average of 2.0 or better on all work attempted. Transfer students must meet the minimum requirements for transfer into the Anderson School. Such students should notify the School of their intent to transfer and present a transcript of their college work not later than the eighth week of the semester in which they will complete the requirements for admission.

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS

Transfers 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 course must obtain approval of the School's faculty.

ADVISEMENT

Students desiring to enter the Anderson School may obtain advisement in Room 210 at the 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 courses in business and administrative sciences and economics (including B&AS 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 business and administrative sciences while enrolled at the Anderson School.
5. Course requirements:

a. Preadmission requirements	62 hours
b. Business and Administrative Sciences Core:	
B&AS 300 Management Science I	3 hours
B&AS 301 Management Science II	3 hours
B&AS 303 Accounting for Management Control	3 hours
B&AS 306 Organizational Behavior I	3 hours
B&AS 307 Organizational Behavior II	3 hours
B&AS 308 Organizational Environment	3 hours
B&AS 309 Man, Society and Law or B&AS 310 Law of Contracts (NOTE: Students concentrating in accounting must take 310.)	3 hours
B&AS 322 Marketing Management	3 hours
B&AS 326 Financial Management	3 hours
B&AS 398 Management Career Planning (second-semester junior and seniors)	1 hour
B&AS 498 Senior Seminar (taken in the last semester of the senior year)	3 hours
Econ 300 Micro-Economic Theory	3 hours
Econ 315 Money and Banking	3 hours
Total Business and Administrative Sciences Core	37 hours§
c. Electives	
Upper division humanities	3 hours¶
Upper division social sciences and/or behavioral sciences	3 hours¶
Business and other—at least 12 hours must be in business and administrative sciences courses. With special permission of the School, electives may include up to 6 hours of courses at the graduate level.	24 hours
Total Electives	30 hours
Total Degree Requirements	129 hours

6. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test. This test must be taken when the student has accumulated between 88 and 108 degree hours. Registration materials will be available from the office of the Anderson School Director of Student Affairs early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the office of the Anderson School Director of Student Affairs.

‡It is recommended that B&AS 202 be taken in the second semester of the sophomore year. Students desiring an accounting concentration **must** earn at least a C in B&AS 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. B&AS 340 may be taken by those concentrating in accounting in the second semester of the sophomore year.

§The upper division core requirements are subject to change. Students are responsible for meeting the 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.

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 Anderson School.

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.

APPLICATION FOR DEGREE

During the first semester of the senior year, students must file an application for the B.B.A. degree with the Director of Student Affairs of the Robert O. Anderson School of Business and Administrative Sciences. 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. Mori, Mr. Yeakel.

In addition to the core courses required of all B.B.A. candidates, the accounting concentration consists of these courses:

B&AS 340, 341, 342, 346, 440, 443, 449 — 21 hours

B&AS 348 and 445 are strongly recommended as electives. Students interested in careers in professional accounting are urged to consider additional study leading to the M.B.A. degree. The "Professional Accountancy Curriculum" is described in a brochure available from the Director of Student Affairs and members of the accounting faculty.

Management Information Systems. Advisers: Mr. Clancy, Mr. Newpeck.

The course requirements are:

a. B&AS 449 and 460
b. Five courses (15 hours) approved by the adviser. B&AS 346, 435, and 436 are recommended. — 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. Moyer, Mr. Simonson, Mr. Yeakel.

In addition to B&AS 326, required courses are:

a. B&AS 470, 471, and 472.
b. Three of the following: B&AS 340, 341, 496, Econ 303, 350, 400, 415, or 424. — 18 hours

International Management. Advisers: Mr. Lenberg, Mr. Raveed, Mr. Winter.

To graduate with a concentration in international management, the student must maintain a GPA of 3.0 or higher. Qualified students interested in professional careers in international management are urged to consider entering the M.B.A. program to pursue a graduate degree or other related combined graduate degree options offered by the School with other departments of the University (such as the dual M.B.A./M.A. degree in Latin American Studies and international management or the Ph.D. degree program concentrating in international management with special emphasis on Latin America).

The course requirements are:

a. B&AS 483 and 485 and 6 credit hours selected from B&AS 583, 585, 586, 588, 589.*
b. Minimum of 9 credit hours in one of the following options:

   Latin America Emphasis Option. Econ 420, 421, 424, Geog 301, 302, Anth 314, Hist 282, 384, 481, 483, Pol Sc 355 or 356, 443, 445, Soc 425, Spanish 201 or 211 or Portuguese 275.

   European Emphasis Option. Econ 424, 450, 455, Geog 332, 333, 381, Hist 303, 349, 438, Pol Sc 221, 357, 443, French 201 or 276 or German 201 or Russian 201.

c. It is highly recommended that the student's 6 credit hours of electives in upper division humanities and social science and/or behavioral sciences also be selected from (b) above. — 21 hours

Management Science. Advisers: Mr. Anderson, Mr. Lievano, Mr. Peters, Mr. Reid.

The required courses are:

a. B&AS 436 and 439
b. Three courses (9 hours) in additional mathematics, computer science, management information systems, management science, or related subject areas approved by the adviser.
c. Two courses (6 hours) in business and administrative sciences electives. — 21 hours

Marketing Management. Advisers: Mr. Hayes, Mr. Lenberg, Mr. Raveed, Mr. Winter.

The course requirements are:

a. B&AS 480, 483, 484, 485, 486, and 487. (Seniors with 3.0 or higher GPA may also take 3 credit hours selected from B&AS 581, 583, 585, 589* in place of 3 credit hours under (b) below.)
b. Minimum of 3 credit hours from the following: Econ 330, 332, 424, Journ 401, 402, Speech Com 330, 361, 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. — 21 hours

Qualified students interested in careers in marketing management are urged to consider entering the M.B.A. program for additional study.

Human Resources Management. Advisers: Mr. Champoux, Mr. Finston, Mr. Jehenson, Mr. Rehder.

In addition to B&AS 306 and 307, the required courses are:

a. B&AS 464 and 466
b. Two upper division courses in psychology and/or sociology. — 12 hours

General Management. Adviser: B.B.A. Program Director.

Required courses are:

One B&AS course beyond the core in each of at least four of the above areas. — 12 hours

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 business and administrative sciences courses.
   c. Be accepted for admission to the Robert O. Anderson Graduate School of Business and Administrative Sciences.
   d. Take the Graduate Management Admission Test (GMAT) prior to admission.
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. Cooperating departments throughout the University will accept the courses in business and administrative sciences taken during this year as constituting a minor for the purposes of the bachelor's degree.
4. Prior to being awarded the bachelor's degree the student applies for admission to the Robert O. Anderson Graduate School.
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 School. 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

*Students wishing to take a 500-level course **must** petition the Anderson Graduate School for undergraduate credit.

†Students who will 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 Business and Administrative Sciences** for details concerning admission, curriculum, and degree requirements. Copies of this bulletin may be obtained from the M.B.A. Program Director, Robert O. Anderson Graduate School of Business and Administrative Sciences, The University of New Mexico, Albuquerque, New Mexico 87131.

‡Information regarding specific courses of study is available from the M.B.A. Program Director's office.

graduate credit. Contact the M.B.A. program secretary 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 Director 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 offerd by the School unless he or she has been officially admitted for study.**

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 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 Business and Administrative Sciences 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 earlier 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 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 Robert O. Anderson School of Business and Administrative Sciences 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)

B&AS 500 Quantitative Analysis I	3
B&AS 501 Quantitative Analysis II	3
B&AS 502 Accounting and Management Information Systems I	3
B&AS 504 Organizational Economics I	3
B&AS 506 Organizational Behavior I	3
B&AS 507 Organizational Behavior II	3
B&AS 509 Organizational Environment II—Law	2
B&AS 510 Computer Programming	1
B&AS 520 Operations Research and Production Management	3
B&AS 522 Marketing Management	3
B&AS 526 Financial Management	3
	29

Second Year Core Courses
(taken during the fifth year of the "Three-Two" Program)

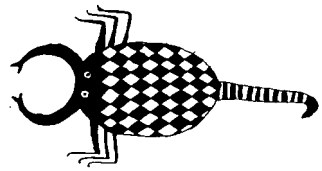
B&AS 398 Management Career Planning	0
B&AS 503 Accounting and Information Systems II	3
B&AS 505 Organizational Economics II	3
B&AS 508 Organizational Environment I	3
B&AS 528 International Management	3
B&AS 598 Seminar in General Management	3
Electives†	15
	30

NOTE: Reasonable adjustments can be made in the above sequencing of courses 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, financial management, international management, marketing management, management science, organizational economics and environment, management information systems, and human resources management is provided. See the **Bulletin of the Robert O. Anderson Graduate School of Business and Administrative Sciences** 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 Director.

*It is recommended that Econ 201, 300, and 303 be taken.

†Three hours must be taken in one of the basic areas included in the first-year core. Otherwise, courses may be taken in business and administrative sciences or in other subject areas appropriate to the candidate's career objectives.



COLLEGE OF EDUCATION

THE COLLEGE OF EDUCATION seeks to prepare effective teachers, counselors, administrators, and other professional workers for public schools, colleges, and universities. This mission is carried out cooperatively with other colleges within The University of New Mexico. Working relationships also exist with other universities within the State and region.

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 Standard Certificate to teach in New Mexico. This certificate may be renewed only once for an additional four years. Forms for application for the Standard 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 Associate 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, while leading to a bachelor's degree do not also lead to teacher certification. In later sections of the catalog, curricula for all bachelor's degree programs are described.

The College of Education offers, through the Graduate School, 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 School 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 progam 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 chairman 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 semesters, 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 majors must successfully complete Sp Ed 210 and 211 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 above).

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 teacher education programs. If you plan to become certified as a teacher, however, **you must be admitted to a teacher education program and must complete all requirements specified by that 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 all 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 EXPERIENCES

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 play, guided participation with groups of children, youth, and adults, and formal student teaching assignment(s).

OBSERVATION AND PARTICIPATION

Selected elementary and secondary schools in the Albuquerque Public Schools, other nearby school systems, and selected community agencies are used for observation and 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. The University of New Mexico is indebted to the administration and teachers of the Albuquerque Public Schools and other school systems throughout the State for the excellent working relationships 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 University 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 averge of a 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).

SPECIAL REQUIREMENTS FOR SECONDARY STUDENT TEACHERS

The student must have:

1. Submitted recommendations from three faculty members indicating that the student is believed ready for student teaching.
2. Completed a major portion of work in his/her teaching major and minor.
3. Attained at least a 2.5 grade-point average in a major (teaching) concentration and at least a 2.2 grade-point average overall.
4. **Students enrolled in secondary student teaching may be required to comply with a modified academic calendar.**

SPECIAL REQUIREMENTS FOR PHYSICAL EDUCATION STUDENT TEACHERS

The student must have:

1. Submitted recommendations from three faculty members, including the student's adviser, indicating that the student is believed ready for student teaching.
2. Successfully completed a major portion of the theory course work as determined by the adviser in consultation with the student teaching personnel.
3. Completed all of the following prerequisites: Ed Fdn 290, 300, and 310; PE 245, 301, 302, 309, 310, 319, 326L, 444, and 489.
4. Removed all Ds and Fs in the major field.
5. Attained at least a 2.5 grade-point average in the major field and at least a 2.2 grade-point average overall.
6. **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 competitive 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, SCAT/ACT 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 MODULES. The methods module combines on-campus instruction with opportunities to observe and work with children in classroom settings. The methods module 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 module, the student is assigned to full-time responsibility in an elementary classroom under the direction of a cooperating teacher. The student-teaching module is:

El Ed 400 Stu Tchg in El Sch	15

Students enrolled in both the methods and student-teaching modules are assigned grades of CR (credit is awarded) or NC (no credit is awarded) in both the methods and student-teaching modules. The hours for these modules 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-module students work in classrooms throughout the school during the classroom application

aspects of the methods module. Students are charged a $10.00 laboratory fee for the methods module and the student-teaching module. This fee is for materials and supplies used in the schools by elementary education students.

Students may be permitted to take student teaching apart from the modular program. In these cases the student must meet all the requirements for entry into student teaching and must petition the Director of Student Teaching to have the request considered.

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

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 children's book collection, the Anita Osuna Carr Bilingual/Bicultural Collection, print and media materials in most subject matter areas, courses of study, and curriculum guides. The Center provides preview areas for media, soundproof rooms for listening to and recording tapes, a darkroom, the services of a professional artist, and loan of a variety of media production equipment for class assignment. An audio-visual production area is also available.

MANZANITA CENTER. Manzanita Center is an observation and laboratory facility for College of Education and other University students. Students may observe a model nursery or kindergarten 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 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 those 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 Dean.
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. 46-47). **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.
8. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College 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 on pp. 47-48.

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 EDUCATION 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 300 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 profes-

*Or approved substitute.

sional education is required. **In some programs Ed Fdn 300 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.

ART EDUCATION

MAJOR STUDY FOR TEACHER CERTIFICATION IN ART, ALL LEVELS (GRADES 1-12) AND 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 teaching certification in 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; the College of Fine Arts offers a Bachelor of Fine Arts in Education.

A student may satisfy requirements for art 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 (grades 1-12 or 7-12), 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 upon (a) successful completion of Art Ed 220 and (b) positive recommendations from the professor of Art Ed 220 (or, in some cases, Art Ed 320) and 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 curricula in the Department of Art Education which qualify the student to apply for certification by the New Mexico State Department of Education to teach art in grades 1-12 or grades 7-12. The student may choose either curriculum. Both the All-Level (grades 1-12) and Secondary-Level (grades 7-12) Curricula require no teaching minor. However, with careful planning in conjunction with an adviser, it is possible for the student to develop a teaching minor within a four-year period. The teaching minor must be approved by a minor adviser through the Department of Secondary and Adult Teacher Education.

The requirements for the B.A. in Education, All-Level (1-12) and Secondary-Level (7-12) Curricula are outlined below. **The student is required to design an official program of studies in consultation with a department faculty adviser within these requirements.**

ALL-LEVEL (1-12 CERTIFICATION) CURRICULUM

The All-Level (1-12 Certification) Curriculum is for a student who desires to be prepared to teach art at the elementary, middle/junior high, and senior high school levels. Therefore, the student choosing this curriculum needs to design, in consultation with a faculty adviser, a program of studies in art that includes one area of art concentration plus some breadth in other art areas. This student will also do student teaching in art at the elementary, middle/junior high, and senior high school levels, respectively and in sequence.

†A. GENERAL (LIBERAL) EDUCATION REQUIREMENTS—48 HOURS

1. Fine and practical arts
   Art St 123 (6 hrs), Art Hi 130 (3 hrs), plus 9 hours in courses selected from the areas of music, theatre arts, and industrial arts, of which 3 hours must be in each of two of these three areas.
   †18 hours
2. Communication arts
   English composition and writing courses only.
   6 hours
3. Multicultural studies
   6 hours

plus 18 hours distributed among three of the seven areas below, 6 hours of which must be in one area:

4. Behavioral science
5. Foreign language
6. Natural sciences
7. Humanities
8. Mathematics
9. Health education, physical education, and recreation
10. Social sciences

18 hours

B. PROFESSIONAL EDUCATION REQUIREMENTS—9 HOURS

Ed Fdn 290 Foundations of Education (3)
Ed Fdn 300 Human Growth and Development (3)
Ed Fdn 310 Learning and the Classroom (3)

9 hours

C. ART EDUCATION REQUIREMENTS—15 HOURS

Art Ed 220 Introduction to Art Education I (3)
Art Ed 320 Introduction to Art Education II (3)
Art Ed 400 Student Teaching in the Elementary School (3)
Art Ed 460 Student Teaching in the Middle/Junior High School (3)
Art Ed 461 Student Teaching in the High School (3)

15 hours

†D. ART REQUIREMENTS—51 HOURS

1. Basic art courses
   Art St 123 Studio Fundamentals (6)
   Art Hi 130 Contemporary Art (3)
   Art Hi 201 History of Art I (3)
   Art Hi 202 History of Art II (3)
   15 hours
2. Major art concentration
   A planned concentration of 12 hours in a single studio area, 9 hours of which must be in courses numbered 300 or above.
   12 hours
3. Minor art composite
   A planned composite of 12 hours of art studio and/or art history to achieve breadth in art (or, with permission of the student's faculty adviser, to extend one or develop another art area concentration). Six of the 12 hours must be in courses numbered 300 or above.
   12 hours
4. Art electives
   12 hours of art studio and/or art history, 6 hours of which must be in courses 300 or above.
   12 hours

†E. FREE ELECTIVES—14 HOURS

At least 3 hours must be in courses numbered 300 or above.

14 hours

Total 128 hours

SECONDARY-LEVEL (7-12 CERTIFICATION) CURRICULUM

The Secondary-Level (7-12 Certification) Curriculum is for a student who desires to teach only at the middle/junior and/or senior high school levels. Therefore, the student choosing this curriculum needs to design, in consultation with a faculty adviser, a program of studies in art with in-depth, concentration in a few art areas rather than breadth in many art areas. This program is to meet the specialized needs of art teaching at the secondary level. This student will be required to do student teaching in art only at the middle/junior high and senior high school levels respectively and in sequence.

†A. GENERAL EDUCATION REQUIREMENTS—48 HOURS

Same as All-Level (1-12) Curriculum (see above).

48 hours

B. PROFESSIONAL EDUCATION REQUIREMENTS—9 HOURS

Same as All-Level (1-12) Curriculum (see above).

9 hours

C. ART EDUCATION REQUIREMENT—15 HOURS

Same as All-Level (1-12) Curriculum (see above).

†Please note that Art St 123 (6 hrs) and Art Hi 130 (6 hrs) fulfill requirements in **both** areas of **general (liberal) education** and **art**, which allows 14 hours of **free electives** and a total of 128 hours for graduation.

EXCEPT

1. Art Ed 400 Student Teaching in the Elementary School (3) is not required. In its place, an Art Ed elective (300-level or above) oriented toward secondary-level art teaching must be substituted.
2. In Art Ed 220 and 320, the major emphasis in theory, lab, and field experiences should be directed toward art teaching at the secondary level.

15 hours

†D. ART REQUIREMENTS—51 HOURS

1. Basic art courses
   Same as All-Level (1-12) Curriculum (see above).

   15 hours

2. Major art concentration
   Same as All-Level (1-12) Curriculum (see above).

   12 hours

3. Minor art concentration
   A planned concentration to extend the major art concentration or to develop a second art area concentration. Six of the 12 hours must be in courses numbered 300 or above.

   12 hours

4. Art electives
   In consultation with an adviser, the art electives should be planned to strengthen the student's total program of studies in art. Six of the 12 hours must be in courses numbered 300 or above.

   12 hours

†E. FREE ELECTIVES—14 HOURS

At least 3 hours must be in courses numbered 300 or above.

14 hours

Total 128 hours

1-12 AND 7-12 CURRICULA

FIRST YEAR

First Semester

General education requirements	6
* Art St 123 Studio Fundamentals	6
* Art Hi 130 Contemp Art	3
	15

Second Semester

General education requirements	6
¶Art requirements	6
Art Hi 201 Hist of Art I	3
	15

SECOND YEAR

First Semester

General education requirement	3
Ed Fdn 290 Foundations of Ed	3
‡ Art Ed 220 Intro to Art Ed I	3
¶Art requirements	6
Art Hi 202 Hist of Art II	3
	18

Second Semester

General education requirements	6
Ed Fdn 300 Human Gwth and Dev	3
‡ Art Ed 320 Intro to Art Ed II	3
¶Art requirements	6
	18

THIRD YEAR

First Semester

General education requirements	6
Ed Fdn 310 Lrng and Classrm	3
¶Art requirements	6
Free elective	3
	18

Second Semester

General education requirement	3
§Art Ed 400 Stu Tchng in Elem Sch	3
¶Art requirements	6
Free elective	3
	15

FOURTH YEAR

First Semester

General education requirement	3
Art Ed 460 Stu Tchng in Mid/Jr High Sch	3
¶Art requirements	6
Free elective	2
	14

Second Semester

General education requirements	6
Art Ed 461 Stu Tchng in High Sch	3
Free electives	6
	15

MINOR STUDY IN ART EDUCATION

FOR ELEMENTARY MAJORS ONLY (24 HOURS)

Art St 123, Art Hi 130, Art elective (200- level, 3 hrs)
Art Ed 214 [110], 215 [115], 220, and
Art Ed elective (400-level, 3 hrs)

FOR SPECIAL EDUCATION MAJORS ONLY (24 HOURS)

Art St 123, Art Hi 130, Art elective (200-level, 3 hrs)
Art Ed 214 [110], 215 [115], 220, and 465

FOR STUDENTS IN OTHER THAN TEACHER-TRAINING PROGRAMS (18 HOURS)

Nonteaching minor requirements: Art St 123, Art St elective (200-level, beginning studio area, 3 hrs); Art Ed 285, Recreation Arts and Crafts (3 hrs); 6 additional hours to be determined with an art education adviser.

GRADUATE PROGRAM

The Department offers an M.A. in Art Education. Also, a student may earn a Ph.D. or Ed.D. in Education with a concentration in curriculum and instruction oriented toward art education. For details of the graduate program, see the Graduate School Bulletin.

BUSINESS EDUCATION

See pp. 53-54 for information about programs in business education.

EDUCATIONAL ADMINISTRATION

See pp. 143-144 for course descriptions and the Graduate School Bulletin for all graduate programs.

EDUCATIONAL FOUNDATIONS

See pp. 144-145 for course descriptions and the Graduate School 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	6
Multicultural studies/languages of the Southwest (written agreement between student and adviser)	6
Fine and practical arts	3
Health, physical education, and recreation	3
Electives	12-14
Total	54

†Please note that Art St 123 (6 hrs) and Art Hi 130 (3 hrs) fulfill requirements in **both** areas of **general (liberal) education** and **art**, which allows 14 hours of **free electives** and a total of 128 hours for graduation.

*Art St 123 and Art Hi 130 are corequisites and must be taken together. Also, these two courses fulfill both **general education** and **art requirements.**

¶In order to fulfill the specified **art requirements** of the 1-12 or 7-12 curriculum, a program of art courses must be **carefully designed** in consultation with an art education faculty adviser by **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; a 300 or above Art Ed 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.

The student pursuing a degree in elementary education should contact the Department of Elementary Education for 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 should contact an adviser in the Department of Elementary Education and 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 I	3
Either Music Ed 293 or 294	2
Ed Fdn 300 Human Gwth and Dev	3
Ed Fdn 310 Lrng and Classrm	3
Methods module	
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
El Ed 400 Stu Tchg Module	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 under "Department of Special Education."

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

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 Chairperson of 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 Chairperson of 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 kindergarten certification 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 300 Human Gwth and Dev
   Psych 320 Dev Psych
   Com Dis 430 Dev of Speech and Lang
   Anth 309 Comp Studies of Chldhd

   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
   El 405 Curriculum for Early Chldhd

   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.

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.

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 School Bulletin for details.

GUIDANCE AND COUNSELING

This department offers work leading to the Master's in Guidance and Counseling. The doctorate is offered in pupil personnel services. 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 and community counseling, counseling in business and industry, 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 School 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.

SCHOOL AND COMMUNITY HEALTH EDUCATION

FIRST YEAR
(same for both tracks)

* Biol 121-122L Prin of Biol	4
* H Ec 125 Intro Nutrition	3
* Chem 141L Elem Gen Chem	4
* Soc 101 Intro Soc	3
H Ed 171 Pers Comm Hlth	3

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

*Courses to fulfill general education requirements.

* Psych 102 Gen Psych II	3
H Ed 260 Intro to H Ed	3
* Eng 220 Expos Wrtg	3
Electives	3
	33

SECOND YEAR

School Health

H Ed 301 Gen Safety Ed	3
* Anthro 130 Cultures of World	3
* Biol 136-139L Hum Anat and Physiol	4
H Ed 212 Fund Human Sexuality	3
* Biol 253-254L Intro Micro	4
* Sp Comm 130 Pub Spkng	3
Ed Fdn 290 Fund of Ed	3
H Ed 345 Prof Lab Exp	3
Electives	6
	32

Community Health

* Anthro 130 Cultures of World	3
* Biol 136-139L Hum Anat and Physiol	4
* Math 102 Intro Statistics	3
* Biol 253-254L Intro Micro	4
Phar 292 Socio-Econ Hlth Care Deliv	3
Electives	15
	32

THIRD YEAR

School Health

Ed Fdn 300 Human Gwth and Dev	3
H Ed 333 Mentl/Emo Hlth in Classrm	3
H Ed 471 Intro Comm Hlth	3
Ed Fdn 310 Lrng in Classrm	3
Lib Sci 432 Prod of Inst Mat	3
#H Ed 469 Elem Sch Hlth	3
* Fine arts elective	3
p H Ed 442 Emerg Hlth Care	3
* Soc elective	3
Electives	6
	33

Community Health

* Psych 210 Ed Psych	3
* Psych 371 Soc Psych	3
* Sp Comm 329 Prob of Interper Comm	3
H Ed 345 Prof Lab Exp	3
H Ed 301 Gen Safety Ed	3
H Ed 471 Intro Comm Hlth	3
Electives	9
* Elective (general education)	3
	30

FOURTH YEAR

School Health

H Ed 400 Stu Tchng Elem Sch	6
H Ed 475 Alt Apprch in Drug Ed	3
#H Ed 470 Sec Sch Hlth and H Ed	3
H Ed 461 Stu Tchng Sec Sch	6
* Multiculture electives	6
Electives	6
* Elective (general education)	3
	33

Community Health

H Ed 458 Field Exp I	3
Lib Sci 432 Prod of Inst Mat	3
H Ed 459 Field Exp II	3
* Sp Comm 425 Small Grp Comm	3
H Ed 474 Epidemiology	3
* Multicultural elective	3
Electives	15
	33

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 courses and electives designated by the (*) in the major programs. Screening by health education faculty is a prerequisite to entering the second year of 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 Provisional Teaching Certificate in New Mexico.

A 24-hour minor° is required. Possible minors include: health, biology, mathematics, social science, early childhood education, bilingual education, psychology, special education, and recreation.

FIRST YEAR

† Eng 101 or equivalent	3
† Psych 102 Gen Psych	3
PE 210 Dance	2
PE 245-1 Prof Lab Exper	2
PE 260 Officiating	2
PE 273 Athletic Trng	2
PE 289 Tests and Meas	4
General education	12
Electives (minor)	3

SECOND YEAR

PE 245-2 Prof Lab Exper	2
PE 319 PE in Elem Sch	3
PE 388 Motor Lrng	3
PE 377 Kinesiology	6
PE 326 Physiol of Ex	6
Ed Fdn 290 Fdn of Ed	3
PE 106 Lifesaving or equivalent	1
‡ PE 211 Comp in Spt and Dance I	4
Electives (minor)	4
	32

THIRD YEAR

‡ PE activities	3
PE 107 Water Safety Instr (or certificate)	2
JUNIOR BLOCK (FALL)	
PE 444 Tchng PE I	4
PE 301 Tchng Team Sports	2
PE 310 Tchng Dance	2
Ed Fdn 300 Human Gwth and Dev	3
JUNIOR BLOCK (SPRING)	
PE 445 Tchng PE II	4
PE 302 Tchng Indiv and Dual Spts	2
PE 309 Tchng Gymnstcs	2
Ed Fdn 310 Lrng and Classrm	3
Electives (minor)	6
	33

FOURTH YEAR

‡ PE activities	3
PE 379 Org and Adm of PE	3
PE 452 Org Spts Prog	3
PE 378 Prin of PE	3
PE 466 Special PE	3
‡ PE 212 Comp in Spt and Dance II	1
PE 461 Stu Tchng Sec Sch	6
§ PE 400 Stu Tchng Elem Sch	6
Electives (minor)	10
	32

* Courses to fulfill general education requirements.
# Juniors and seniors only.
p Prerequisite: competency in standard first aid.
° 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.
† May count toward general education requirement.
‡ During your freshman year see the Health, Physical Education and Recreation Deparment for specific requirements.
§ To be taken only if student desires elementary school certification.

Screening by the HPER Department is a prerequisite for admission into a teacher certification program. Certification with a teaching major (or minor in physical education requires the completion of the physical education major (or minor) program as defined in the catalog which was current when the student completed the departmental screening process. 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 245-1 Prof Lab Exper	2
PE 210 Dance	2
‡ PE 211 Comp in Spts and Dance I	2
PE 319 PE in Elem Sch	3
PE 388 Motor Lrng	3
PE 209 Fdn Human Perf	3
PE 378 Prin of PE	3
JUNIOR BLOCK (FALL)	
PE 301 Tchng Team Spts	2
PE 310 Tchng Dance	2
PE 444 Tchng PE I	4
	26

MINOR STUDY IN PHYSICAL EDUCATION DESIGNED FOR SPECIAL EDUCATION MAJORS

(Not limited to special education majors)

PE 107 Water Safety Instr (or certificate)	2
PE 209 Fdn Human Perf	3
PE 210 Dance	2
‡ PE 211 Comp in Spts and Dance I	2
PE 388 Motor Lrng	3
PE 319 PE in Elem Sch	3
PE 301 Tchng Team Spts	2
PE 444 Tchng PE I	4
PE 466 Special PE	3
PE 467 Survey of Phys Defects	3
	27

MINOR STUDY IN ATHLETIC COACHING

PE 273 Athletic Trng	2
PE 209 Fdn Human Perf	3
PE 484 Adm Varsity Athletics	3
PE 495 Field Exper	3
Choose two of the following three courses:	
PE 388 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 Gymnstcs	2
PE 464 Theory of Football	3
PE 465 Theory of Basketball	3
PE 245-4 Prof Lab Exper	2
	26

Students who wish to be certified by the Department of Secondary and Teacher Education with a minor in biology should confer with the Department of Secondary and Teacher Education.

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 or equivalent	3
† Biol 121L-122L Prin of Biol	8
† H Ed 164 First Aid	2
† H Ec 125 Food for Man	3
PE 210 Dance	2
PE 273 Athletic Trng	2
PE 245-1 Prof Lab Exper	2
PE 106 or equivalent Lifesaving	1
PE 107 Water Safety Inst (or certificate)	2
PE 289 Tests and Meas	4
PE 260 Officiating	2
	31

SECOND YEAR

Biol 221 Intro Genetics	3
† Psych 102 Gen Psych II	3
Ed Fdn 290 Fnd of Ed	3
Ed Fdn 300 Human Gwth and Dev	3
H Ed 171 Per and Comm Hlth	3
PE 245-2 Prof Lab Exper	2
PE 388 Motor Lrng	3
‡ PE 211 Comp Spt and Dance I	4
PE 377 Kinesiology	6
Gen education elective	3
	33

THIRD YEAR

PE 326 Physiol of Ex	6
Biol 222 Evol and Ecol	3
‡ Biol elective	3
PE 373 Adv Athl Trng	3
JUNIOR BLOCK (FALL)	
PE 301 Tchng Team Spts	2
PE 310 Tchng Dance	2
PE 444 Tchng PE I	4
JUNIOR BLOCK (SPRING)	
PE 302 Tchng Indiv and Dual Spts	2
PE 309 Tchng Gymnstcs	2
PE 445 Tchng PE II	4
Ed Fdn 310 Lrng and Classrm	3
‡ PE activities	3
	37

FOURTH YEAR

PE 379 Org and Adm PE	3
PE 452 Org of Spt Prog	3
PE 466 Special PE	3
PE 378 Prin PE	3
PE 494 Clinical Prac	6
‡ PE 212 Comp in Spt and Dance	1
PE 461 Stu Tchng	6
‡ PE activities	3
‡ Biology elective	3
	31

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 (PE 377)
  2. Physiology (PE 326L)
  3. Physiology of Ex (PE 326L)
  4. Applied Anatomy and Kinesiology (PE 377)
  5. Psychology (2 courses) (Psych 102 and Ed Fdn 300)
  6. First Aid and Safety (H Ed 164)
  7. Nutrition (H Ec 125)
  8. Remedial Exercise (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 (600 clock hours) (PE 494)

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

OPTION IN ADAPTIVE PHYSICAL EDUATION AND CORRECTIVE THERAPY

(Leading to the degree of Bachelor of Science in Physical Education, with a minor in biology, and national certification in adaptive physical education and corrective therapy)

FIRST YEAR

† Engl 101 or equivalent	3
† Biol 121L-122L Prin of Biol	8

‡ During your freshman year see the Health, Physical Education, and Recreation Department for specific requirements.

† May count toward general education requirement.

†H Ed 164 First Aid	2
†H Ec 125 Food for Man	3
†Psych 102 Gen Psych II	3
PE 210 Dance	2
PE 245-1 Prof Lab Exper	2
PE 106 or equivalent Lifesaving	1
PE 107 Water Safety Inst (or certificate)	2
PE 260 Officiating	2
PE 289 Tests and Meas	4
	32

SECOND YEAR

Psych 320 Dev Psych	3
Psych 260 Lrng	3
Biol 221 Intro Genetics	3
Ed Fdn 290 Fnd of Ed	3
H Ed 171 Per and Comm Hlth	3
Biol 222 Evol and Ecol	3
PE 245-1 Prof Lab Exper	2
PE 388 Motor Lrng	3
‡PE 211 Comp Spt and Dance I	4
General education elective	3
PE 397 Kinesiology	6
	36

THIRD YEAR

PE 326L Physiol of Ex	6
Psych 331 Psych of Personality	3
Psych 240 Physiol Psych	3
‡PE activities	3
‡Biology electives	6
JUNIOR BLOCK (FALL)	
PE 301 Tchng Team Spts	2
PE 310 Tchng Dance	2
PE 444 Tchng PE I	4
JUNIOR BLOCK (SPRING)	
PE 302 Tchng Indiv and Dual Spts	2
PE 309 Tchng Gymnstcs	2
PE 445 Tchng PE II	4
	37

FOURTH YEAR

Psych 332 Abnormal Psych	3
PE 378 Prin of PE	3
PE 379 Org and Adm of PE	3
PE 452 Org and Adm of Spts Prog	3
PE 466 Special PE	3
PE 467 Survey of Phys Defects	3
PE 494 Clin Prog	9
PE 461 Stu Tchng	6
‡PE 212 Comp in Spt and Dance I	1
‡PE activities	3
	37

GENERAL EDUCATION FOR PHYSICAL EDUCATION MAJORS

Students must develop a written plan of study for general education in consultation with an adviser from the Department of Health, Physical Education and Recreation. This plan must include, as a minimum, one course taken from each of six of the ten areas of study specified by the College of Education (see p. 45). This should be done during the freshman year.

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 Lit	3
Journ 251 News Wrtng or Bus Ed 265 Bus Communications	3
Natural science	6-8
Recrea 175 Fdn of Recrea	3
Fine and practical arts elective	2-3
H Ed 164 First Aid	2
Psych 102 Gen Psych II	3
Recrea 290 Creat and Soc Arts for Recrea	3
Elective	3
	28-31

SECOND YEAR

H Ed 171 Per and Comm Hlth	3
Speech 130 Pub Spkng	3
Recrea 321 Recrea Leadership	3
Recrea 345 Prof Lab Exper in Recrea	3
Social science elective	3
HPER elective	3
Psych elective (200 level or above)	3
Recrea program option	3
Directed Recrea electives	6
Electives	3
	33

THIRD YEAR

Recrea 378 Outdoor Recrea	3
Sp Com 225 Prob Solv Groups	3
Recrea 454 Dev of Recrea Prog	3
Recrea 495 Field Exper	3-6
Psych elective (300 level or above)	3
Social science elective	3
Fine and practical arts elective	3
Recrea program options	3
Directed Recrea elective	3
Electives	3
	30-33

FOURTH YEAR

Recrea 495 Field Exper	3-6
Recrea 480 Admin of Recrea Prog	3
Multicultural education	3
Social science elective	3
Recrea program option	6
Directed Recrea elective	3
Electives	8-11
	29-35
Total	128

MINOR STUDY IN RECREATION

Recrea 175 Fdns of Recrea	3
Recrea 290 Creat and Soc Arts for Recrea	3
PE 319 PE in Elem Sch	3
Recrea 321 Recrea Leadership	3
Recrea 345 Prof Lab Exper in Recrea	3
Recrea 454 Dev of Recrea Prog	3
Electives	6
	24

GENERAL EDUCATION

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

Behavioral science Psych 102 (Gen Psych II) (3) plus 6 hours of Psych electives (200-level or above)	9 hours
Communicative arts Engl 102 (3) Sp Com 130 (Public Spkng) (3) Sp Com 225 (Prob Solv Groups) (3) Bus Ed 265 (Bus Commun) (3)	12 hours
Fine and practical arts	6 hours
Natural sciences	6 hours
Social sciences	9 hours
Health education or physical education	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

† May count toward general education requirement.
‡ During your freshman year see the Health, Physical Education, and Recreation Department for specific requirements.

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 Education for Vocational Certification.

At least 40 hours of home economics subject matter is required for a major. A composite of 54 hours is encouraged for those planning to teach semester courses. Students desiring another teaching field will need a 24-hour minor.

HOME ECONOMICS EDUCATION

FIRST YEAR

Anth 130 Dev of Culture	3
*Communication electives	6
Psych 101 or 102 Gen Psych I, II	3
Science elective	4-6
Soc 101 Intro	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
	29-31

SECOND YEAR

Soc and/or Psych electives	6
Econ 201 or 200	3
Humanities elective	3
*Communication elective	3
Art Ed 130 Tech of Design Ed (fall)	3
Ed Fdn 290 Fdn of Ed	3
H Ec 125 Intro Nutrition	3
H Ec 250 Clothing and Human Behav (spring)	2
H Ec 252 Textiles	3
H Ec 218 Marriage and Pers Dev	3
	32

THIRD YEAR

Soc and/or Psych elective	3
Econ, Hist, or Geog	3
*Multicultural elective	3
Ed Fdn 300 Human Gwth and Dev	3
Ed Fdn 310 Lrng and Classrm	3
H Ec 341 House and Its Environ	3
H Ec 443 Family Decision Making	3
H Ec Ed 437 Tchng of H Ec (spring)	3
H Ec Ed 361 Pre-Stu Tchng in H Ec (spring)	3
Electives	6
	33

FOURTH YEAR

Soc and/or Psych elective	3
H Ec 408L Gwth and Dev of Preschool Child	2-3
H Ec 418 Family Relationships	3
H Ec 444 Family Finance (spring)	3
H Ec 445L Home Management Lab	4
H Ec Ed 461 Stu Tchng in Sec Sch	6
H Ec Ed 465 H Ec Sem	1-2
Electives	6
*Multicultural elective	3
	31-33

12 hours selected from Soc and/or Psych, 3 hours 300-level or above.

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, 408L, 418
4. H Ec 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, 408L, 418.
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 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 business and administrative sciences; 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 committee members 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. 54 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 p. 68.

MINOR IN MUSIC EDUCATION

Students may also minor in music education. See p. 207 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 degrees.

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

*Approval of department needed.

conducts programs 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. 45) 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 in secondary education, 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.

Modules I and II, Pre-Student Teaching, 6 semester hours each. These modules each consist of two courses, which must be taken as a block, and of classroom work and field experiences. The modules must be taken consecutively and must be successfully completed before the student can enroll in Module III.

Module III, Student Teaching Preparation and Internship, 6 to 15 semester hours. This module ranges from 6 to 15 semester hours, dependng upon the program in which the student is enrolled.

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 teaching major 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

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 student 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 business and administrative sciences courses.

The student who wishes to minor in business education (general business) must take Bus Ed 262, B&AS 201 and 202, and 15 additional hours of courses in business education, economics, and business and administrative sciences.

GRADUATE COURSES

See course listings under Education, Secondary. See also Department Chairperson or Assistant Chairperson for Business Education for course of study.

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.

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 consists 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 adivser 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 enhance 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 includes each of these areas: reading in the secondary school, psychology of reading, diagnosis of reading, tests and measurements, linguistics, adolescent literature, methods of TESOL, 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
	16
Second Semester	
Bus Ed 114 Shorthand Dict (Gregg only)	
or	
Bus Ed 253 Shorthand Trans (Forkner only)	3
Bus Ed 262 Adv Typing	3
Engl 102 Wrtg w/Rdgs in Lit	3
Hist 101 or 102 Western Civ	3
Electives	4
	16
Third Semester	
Bus Ed 117 Off Mach and Filing	2
Bus Ed 253 Shorthand Trans (Gregg only)	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
B&AS 201 Secretarial Acctg	3
	16

Required for graduation: 64 semester hours. Four hours of nonprofessional physical education may be elected.

SPECIAL EDUCATION

PROCESSES ESTABLISHED FOR ALL SPECIAL EDUCATION STUDENTS BY THE DEPARTMENT OF SPECIAL EDUCATION

1. The Department of Special Education requires Spc Ed 201 and Spc Ed 204 (with a grade of B or better in both courses) before screening into the Special Education Teacher Training Program.
2. The Department will provide advisers for each student accepted in the Special Education Teacher Training Program.
3. Students shall write a contract for their program of studies and it shall be on file with both major and minor advisers.
4. Each student is required, upon acceptance into the Department of Special Education, to complete the Data Accumulation Form (DAF—Blue) at the end of each semester, and this shall be on file with the program of studies.
5. The student shall complete degree check requirements for the College of Education, Department of Special Education, upon completion of 92 hours.

GENERAL EDUCATION REQUIREMENTS

All prospective educational personnel should be broadly educated as a foundation for a successful professional career. Each student majoring in special education must satisfy the minimum requirements of 48 hours in six of the ten areas of study specified by the College of Education (see p. 45).

PROFESSIONAL EDUCATION REQUIREMENTS

All students in special education shall have a total of 12 hours in the professional education area.

Educational Foundations 290
Educational Foundations 300 or Psychology 320
Developmental Psychology

*Prerequisites for B&AS 201.
**Must take a total of 16 hours.

Educational Foundations 310 or Psychology 260
Psychology of Learning
Media (AV)—course approved by major adviser

SPECIAL EDUCATION MAJORS

The student pursuing a major in special education should contact the Department of Special Education for the list of program options.

MINOR: EXCEPTIONAL CHILDREN, NONTEACHING
(Minimum 18 hours)

The Department of Special Education offers a nonteaching minor in exceptional children designed to provide students from other departments with a basic understanding of the educational, social, psychological, and medical characteristics and needs of exceptional children. The minor is not designed for, and will not lead to, teaching certification in special education.

The minor in exceptional children requires that students earn a grade of B or better in Special Education 201, 204, and 320 and complete 10 hours selected from the following listed courses (total 18 hours).

All students desiring a nonteaching minor must contact a special education adviser, and a contract (program of studies) must be on file with both major and minor advisers.

NONTEACHING MINOR

Spc Ed 202 Comm Disorders	3
Spc Ed 591A Problems	1-3
Spc Ed and Ed Fdn 383 Ed of the Mex-Amer	3
Spc Ed 408 Spc Ed in Reg Classrm	3
Spc Ed 427 Prob of Hearing Impaired	3
Spc Ed 430 Nature and Needs of Behav Disordered	3
Spc Ed 467 Survey of Phys Defects	3
Spc Ed 492 Workshop in Spc Ed	3
Com Ds 426 Manual Comm	1
* PE 466 Spc PE	3
* PE 486 Prin of Therapeutic PE	3
* PE 488 Motor Lrng	3
Rec 477 Recrea in Spc Ed	3
* Psych 332 Abnormal Psych	3
* Psych 432 Child Clin Psych	3
* Com Ds 330 Speech Path in Schools	3

*Course may not be duplicated for major and minor program.

COLLEGE OF ENGINEERING

ENGINEERS are problem solvers, creators, and builders. They direct their imagination, ingenuity, resourcefulness, and intelligence to the economical usage 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 being more widely recognized, engineers require ever greater breadth and depth of mathematical and scientific cognition, coupled 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 men, money, materials, 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 being placed upon human values and relations. This broad grounding in itself is not sufficient, however, and 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 Civil Engineering Research Facility, which does contract research work relating, for example, to structures, soils, blasts, instrumentation, and environmental 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 with particularly high scores 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).

Students intending to study engineering should take in high school all of the 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 ½ unit of trigonometry 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. 58.

ADMISSION FROM UNIVERSITY COLLEGE

To be eligible for transfer to the College of Engineering from University College, the student must meet the requirements listed below:

1. Completion of 26 semester hours of acceptable credit for a degree in the College of Engineering.
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 30.

TRANSFERS

Students will be eligible for transfer to the College of Engineering from other degree-granting colleges of the University or from other accredited institutions if they have a grade-point index of 2.0 or better on all work attempted in the other degree-granting colleges or institutions and if they have completed 26 semester hours of acceptable credit.

ACADEMIC ADVISEMENT

Academic advisement is required for all students who plan to complete bachelor's degree requirements in the College of Engineering. The college advisement center is located in the office of the Dean of Engineering. Each student is responsible for meeting periodically 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 any 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 accepted for the particular degree falling below 2.0.
3. Two consecutive terms with grade-point averages less than 2.0, regardless of the cumulative average. This criterion will apply if the student has attempted a total of at least 24* credits during the two terms. Part-time students will be subject to this criterion if the grade-point average of the previous consecutive terms which add up to 24* or more credits attempted by the student falls below 2.0.

SUSPENSION

A student who is on academic probation may be suspended at the end of any semester or summer session if less than a 2.0 grade-point average is earned for that particular term, regardless of the student's cumulative average.

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, 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, Computing and Information Science, Electrical Engineering, Mechanical Engineering, and the Bachelor of Engineering with several options. 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 plan on spending more than eight regular semesters to complete requirements for their degree.

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 option, computer science option, and energy and power systems option. 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 Dean's office. In addition, it is possible to specialize to some degree by choosing appro-

*Credits for which a student receives a recorded W or I will be included in the 24-credit requirements.

priate elective courses within the basic curriculum of one of the major departments.

ASSOCIATE OF SCIENCE IN PRE-ENGINEERING

The College of Engineering offers the Associate of Science in Pre-Engineering. This two-year program includes the basic mathematics, basic science, and pre-engineering courses from a regular four-year engineering program.

ENGINEERING TECHNOLOGY

The College of Engineering also offers two-year associate degree programs at the Northern New Mexico Branch of The University of New Mexico which lead to the degree of Associate of Science in Instrumentation Engineering Technology and Laser Engineering Technology. Information on these programs may be obtained from the Director of the Northern New Mexico Branch or the Office of the Dean of the College of Engineering.

STUDIES IN COMPUTER AND COMPUTING SCIENCE

The two major departments in computers at The University of New Mexico are in the College of Engineering, the Department of Computing and Information Science and the Department of Electrical Engineering and Computer Science. Although the two departments have areas of overlapping interest, the basic distinction between the two is the emphasis on the science of problem-solving, programming methodology, and software development (CIS) versus the emphasis on the engineering design of computers and applications of minicomputers and microprocessors to engineering problems (EECS).

Study related to the use of computers and the development of correct programs for solving diverse problems to be executed in a variety of computer systems is offered through the degree of Bachelor of Science in Computing and Information Science. This program prepares the student for positions in scientific programming, the design and analysis of algorithms, programming languages, operating systems, and information systems.

Study related to design and applications of small computer systems is offered through the degree of Bachelor of Engineering/Computer Science option. This program prepares the student for positions in interfacing computers to physical processes, minicomputer and microprocessor applications, and scientific programming.

Study related to the design of computers is offered through the degree of Bachelor of Science in Electrical Engineering. Electrical engineering students may use their senior electives for a concentration in computer science. This program prepares the student for positions in digital electronics, logic circuit design, and interfacing computers to physical processes.

To fulfill the requirements for a minor in computer/computing science, the student must take 21 hours of credit selected from course offerings in the Department of Computing and Information Science and computer science courses in the Department of Electrical Engineering and Computer Science. Certain introductory courses, such as CIS 105, 155, and EECS 336, may not be included in the 21 hours. The minor program must be approved by an adviser in EECS and an adviser in CIS before the completion of 12 hours of the minor. With approval of both advisers, computer courses in other departments may be allowed in the minor.

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

It is possible for students enrolled in the Air Force ROTC or the Naval ROTC to 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 chairman 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 their engineering 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 of these programs provides students opportunities to meet with other students having the same interests, opportunities, and problems. These programs help students get scholarships, counsel them about both personal and academic problems, and provide 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 which alternates a semester of full-time academic study with a semester of full-time employment in industry. Co-op students gain industrial experience 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 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. Thus, Co-op students normally begin their first work phase at the end of their freshman year.

The Engineering Co-op Program has a number of pre-freshman summer jobs and freshman scholarships for qualified high school graduates. These special Co-op positions are normally reserved for outstanding high school graduates, minorities, or women who show promise in engineering. Students interested in these pre-Co-op positions should apply for admission to the University and to the Co-op Program by January 30 during their senior year in high school.

While on each work phase Co-op students must register in Engineering 100 and pay a $20 fee. This registration maintains the students' academic status, including eligibility for dormitory, activity card, library, and insurance. After completing each work phase, the Co-op student registers in one of the engineering courses, Evaluation of Co-op Work Phase, for 1 credit hour. A maximum of six hours of academic credit earned from the Co-op work phase may be counted as technical elective credit toward the student's engineering degree.

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, Computing and Information Science, Electrical Engineering, Mechanical Engineering, and Nuclear Engineering. A fifth year of study leading to the master's degree is strongly recommended for students of more than usual ability who believe that they can profit from the additional study.

A program of graduate study in **mechanics** is offered jointly by the Departments of Civil and Mechanical Engineering. Also available in the College of Engineering is a program of graduate study in **computer science.** Graduate students should consult the engineering departmental listings in the Graduate School Bulletin for additional information on the 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 Graduate School a program leading to the degree of Doctor of Philosophy in Engineering, under which study concentrations may be pursued in a variety of engineering fields. Consult the current Graduate School 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. 28). Special attention is called to the rules on probation and suspension.

COURSES NUMBERED 300 OR ABOVE

Students may be admitted to courses numbered 300 or above in the College of Engineering (1) if they are not more than 8 hours short of completing all freshman and sophomore requirements, (2) if they have completed all prerequisites for the course in question, (3) if the remaining lower-division requirements appear on their program, or (4) at the discretion of 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.

MAXIMUM 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 hours.

GRADUATION REQUIREMENTS

Specific graduation requirements are as follows:

1. Candidates for the bachelor of science in any of the engineering

departments 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 department 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. 19.
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. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.

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 three options available under the bachelor of engineering program and for the two-year engineering technology programs 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 101L Intro to Engr	4	(1-6)
Math 162 Calculus I	4	(4-0)
	15	(11-9)

Second Semester

Engr 102L Engr Comp Meth	3	(2-4)
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 or 17	(15-7)

NOTES

1. Special freshman requirements for students majoring in computing and information science are shown on p. 60.
2. High school preparation for Math 162 should include at least 2 units of algebra, 1 of geometry, and ½ 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. 27 for an explanation of the grading system).

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 propellents, 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 360/67 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	(15-5)

Second Semester

Math 316 App Ord Diff Eq	3	(3-0)
Physcs 262 Gen	3	(3-0)
Physcs 163L or 264L Gen Lab	1	(0-3)
Ch E 252 Intro Trans Phen	3	(3-0)
Ch E 301 Thermodynamics	3	(3-0)
H&SS elective	3	(3-0)
	16	(15-3)

THIRD YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Ch E 311 Unit Ops I	3	(3-0)
Ch E 314L Chem Eng Lab I	2	(0-6)
EECS 203 Intro to EE I	3	(3-0)
Chem 311 Physical	4	(4-0)
Tech elective	3	(3-0)
	15	(13-6)

Second Semester

Ch E 302 Ch E Thermo	3	(3-0)
Ch E 312 Unit Ops II	3	(3-0)
Ch E 315L Chem Eng Lab II	2	(0-6)
Ch E 370 Eng Mat Science	3	(3-0)
Chem 312 Physical	4	(4-0)
Tech elective	3	(3-0)
	18	(16-6)

†Students who intend to major in chemical engineering or biomedical engineering are encouraged to take Chem 131L and must take Chem 122L or 132L for the science elective. Students who intend to major in civil engineering must take Chem 122L or 132L for the science elective. Others should consult advisers.

‡Humanities or social science elective. Consult adviser.

*Reduced for students placed ahead in freshman mathematics and/or English.

FOURTH YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Ch E 450 Chem Eng Econ	3	(3-0)
Ch E 454L Proc Dyn and Con	3	(2-3)
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	3	(3-0)
	16	(14-6)

Second Semester

Ch E 452 Senior Seminar	1	(1-0)
Ch E 494L Ch E Design	3	(2-3)
H&SS electives	6	(6-0)
Tech elective	3	(3-0)
† Adv Chem elective	3	(3-0)
	16	(15-3)

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. Technical electives chosen from upper division courses in engineering, mathematics, and science. See department for approved list.
3. Students enrolled in the ROTC programs may, with the approval of the Department Chairperson, substitute aerospace studies or naval science for up to 6 hours of technical electives.
4. Prior to completion of 95 semester hours, the student must obtain departmental approval for the remainder of his degree program.

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. 57 for further details). In some cases it is possible for a student to work in engineering practice under the program during the summer immediately after graduation from high school. 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 School of Business and Administrative Sciences.

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. Freshman engineering students are introduced to the use of the digital computer, and upper-division classes make use of it as a computational tool. The College of Engineering computer facilities are interfaced with the University IBM 360 computer and are available for use by all engineering students. In addition, the Civil Engineering Department provides analog computer facilities. The use of modern digital and analog computers is an integral part of the instruction at all levels.

CURRICULUM IN CIVIL 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)
Physcs 163L Gen Lab	1	(0-3)
CE 202 Engr Stat	3	(3-0)
CE 281L Engr Meas	3	(2-3)
Engl elective (200 or above)	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 270L Constr Mat	1	(0-3)
CE 282L Engr Surveys	2	(1-3)
ME 206L Dynamics	3	(2-3)
EECS 203 Intro to EE I	3	(3-0)
	15	(12-9)

THIRD YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Math 265 Vector Analysis	4	(4-0)
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	3	(2-3)
CE 382 Transp Engr	2	(2-0)
Elective	3	(3-0)
	17 or 18	(15-6)

Second Semester

CE 360L Soil Mech	3	(2-3)
CE 306 Struc Anal II	3	(3-0)
CE 332 Water Res and Hydr Engr I	3	(3-0)
CE 324L Struc Des in Metals	3	(2-3)
CE 336L Sanitary Engr I	3	(2-3)
Elective	3	(3-0)
	18	(15-9)

† Many students will elect Chem 302 and 304L as sophomores.

*Reduced for students placed ahead in freshman mathematics and/or English.

FOURTH YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
CE 411 Reinf Concr Des	3	(3-0)
CE 370 Engr Mat Science	3	(3-0)
CE 490 Prof Prob in Engr	2	(2-0)
Ch E-ME 301 Thermodynamics	3	(3-0)
Tech elective	2 or 3	(3-0)
Elective	3	(3-0)
	16 or 17	(17-0)

Second Semester

Econ 200 Prin and Prob	3	(3-0)
Tech electives	9	(9-0)
Elective	3	(3-0)
	15	(15-0)

NOTES

1. Electives are to be chosen from the humanities and social sciences. See Department Chairperson for list of approved courses.
2. See Department Chairperson for list of approved technical electives. Students enrolled in the ROTC programs may, with approval of the Department Chairperson, substitute aerospace studies or naval science for up to 6 hours of technical electives.

COMPUTING AND INFORMATION SCIENCE

The program of this department is directed toward the education of students for careers in the use of electronic digital computers. Emphasis is on problem-solving techniques and programming methodology, with special emphasis on program correctness and structure. Students in the CIS program are encouraged to supplement their training in these areas with courses in electronic hardware from the Department of Electrical Engineering and Computer Science.

ADMISSION

In addition to the general requirements for admission to the College of Engineering, students applying for admission as majors in computing and information science must have demonstrated competency in English writing by passing the Communications Skills Test.

GRADUATION REQUIREMENTS

To graduate with the degree of Bachelor of Science in Computing and Information Science, the following requirements must be met:

1. Completion of 130 semester hours approved by the academic adviser and the Chairperson of the Department, four of which may be physical education activity.
2. Completion of at least 40 hours in courses numbered 300 or above, with a minimum scholarship index of 2.0 in all such hours attempted.
3. Completion of a minimum of 36 hours in computing science with a minimum scholarship index of 2.5 including the following courses or their equivalent:
   CIS 154 Foundations of Computing Science
   CIS 155 Problem Solving with Computers
   CIS 255 Introduction to Computing Systems
   CIS 256 Intermediate Programming
   CIS 260 FORTRAN Programming
4. A minimum of 12 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 340 Discrete Probability Theory
   One of the following algebra classes: Math 314, 321, 322
5. A minimum of 26 hours in general education electives approved by the adviser distributed as follows:
   a. Humanities and liberal arts (for example, English and literature, modern and classical languages, philosophy, architecture, art, music, 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 science (for example, biology, chemistry, geology, physics, astronomy, engineering) 8 hours
6. Completion of minor field. Suggested minors include anthropology, astro-physics, biology, business and administrative sciences, psychology, chemistry, economics, electrical engineering and computer science, engineering, geology, linguistics, mathematics, philosophy, physics, sociology.

With the approval of the chairman of the department and the academic adviser, the student may design a unique interdisciplinary minor of not less than 24 hours.

MINOR IN COMPUTER/COMPUTING SCIENCE

See p. 61.

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 computing faculty to insure that they are taking appropriate steps toward satisfying the entrance requirements.

GRADUATE STUDY

The Department offers a Master of Science in Computing and Information 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 computing 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 College of Business and Administrative Sciences, a dual degree program in which a student may earn an M.B.A. in Business and Administrative Sciences and a Master of Science in Computing and Information Science.

For master's degree curricula, see the Graduate School Bulletin.

CURRICULUM IN COMPUTING AND INFORMATION SCIENCE

Hours required for graduation: 128

FIRST YEAR

First Semester

CIS 154 Fdn of CS	3
CIS 155 Prob Solv w/Computer	3
Math 162 Calculus I	4
Humanities elective	3
Social science elective	3
	16

Second Semester

CIS 256 Intermed Prog	3
CIS 255 Intro to Computng Sys	3
Math 163 Calculus II	4
Humanities elective	3
Social science elective	3
	16

SECOND YEAR

First Semester

CIS 260	1
Math 321 Linear Alg	3
Lab science	4
Social science elective	3
Minor elective	3
General elective	2
	16

Second Semester

CIS elective	3
Math 340 Disc Prob Theory	3
Lab science	4
Humanities elective	3
Minor elective	3
	16

THIRD YEAR

First Semester

CIS electives	6
Minor electives	6
General electives	4
	16

Second Semester

CIS electives	6
Minor electives	6
General electives	4
	16

FOURTH YEAR

First Semester

CIS electives	6
Minor elective	3
General electives	7
	16

Second Semester

CIS elective	3
Minor elective	3
General electives	10
	16

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Electrical engineering technology is changing very rapidly. Standard practice one year becomes obsolete the next. For these reasons the curriculum in electrical engineering and computer science stresses fundamental concepts as well as current application methods. Thus the student is prepared to understand new developments in this dynamic technical field.

AREAS OF SPECIALIZATION

The curriculum provides considerable freedom in choice of electives, particularly during the senior year. The student can pursue interests in such areas as computers, control systems, communications, electronics, microwaves, solid state, energy conversion, and systems. The student may also choose to develop a strong supporting program in such areas as business administration, life sciences, and mathematics.

An increasing number of students are continuing their studies beyond the bachelor's degree. Such students should select their elective courses in the senior year so that they form a coherent pattern with the graduate courses in their area of specialty.

COMPUTER SCIENCE

A student may concentrate electives in computer science courses or may pursue the computer science option, which leads to a bachelor of engineering degree.

MINOR STUDIES

a. A minor in computer/computing science is offered in conjunction with the Department of Computing and Information Science for non-engineering majors.

b. A minor in electrical engineering and computer science is available for students in the College of Arts and Sciences who are majoring in mathematics. See p. 186.

c. A minor in electrical engineering and computer science is also available for students majoring in computing and information science.

HONORS PROGRAM

Students with a B+ average in the Department of Electrical Engineering and Computer Science are encouraged to enroll in the Honors Program. EECS 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 School of Business and Administrative Sciences, 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.

COMPUTER FACILITIES

The department has seven computers available for student use. These computers are a PDP-11/40, three PDP-8/E machines, Honeywell H-21, and two EAI Analog machines. These machines are equipped with a variety of peripherals, including graphic displays, digital plotters, teletypewriters, printers, card readers, disks, and DEC TAPES. All computers are operated by students in the Department. In addition, the College of Engineering has a PDP-11 that can operate standalone or as a remote job entry station to the University IBM 360/67.

CURRICULUM IN ELECTRICAL ENGINEERING

Hours required for graduation: 130*

SECOND YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Physcs 161 Gen	3	(3-0)
EECS 203 Intro to EE I	3	(3-0)
EECS 206L EE Lab I	2	(1-3)
EECS 238 Comp Logic Dsgn	3	(3-0)
Math 316 Diff Eq	3	(3-0)
† Elective	3	(3-0)
	17	(16-3)

Second Semester

EECS 207L EE Lab II	2	(1-3)
EECS 213 Circ and Sys I	4	(4-0)
Physcs 262 Gen	3	(3-0)
Math 264 Calculus III	4	(4-0)
† Elective	3	(3-0)
	16	(15-3)

THIRD YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
CE 202L Engr Stat	3	(2-3)
EECS 313 Circ and Sys II	4	(4-0)
EECS 321 Electronics I	3	(3-0)
EECS 325L Electr Lab I	2	(1-3)
EECS 361 Electromag Fields and Waves I	3	(3-0)
	15	(13-6)

Second Semester

	Cr.	Hrs. Lect.-Lab.
ME 206L Dynamics	3	(2-3)
EECS 322 Electronics II	3	(3-0)
EECS 326 Electr Lab II	2	(1-3)
EECS 340 Stat Mthd in EE	3	(3-0)
EECS 362 Electromag Fields and Waves II	3	(3-0)
EECS 370 Phys Prop of EE Mat or Physcs 330 Atomic and Nuclear	3	(3-0)
	17	(15-6)

FOURTH YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Ch E-ME 301 Thermodynamics	3	(3-0)
‡ EECS electives	6	(6-0)
‡ EECS elective lab	2	(1-3)
§ Electives	6	(6-0)
	17	(16-3)

Second Semester

‡ EECS electives	6	(6-0)
‡ EECS elective lab	2	(1-3)
§ Electives	8 or 9	(8-0) or (9-0)
	16 or 17	(15-3) or (16-3)

* Reduced for students placed ahead in freshman mathematics and/or English.

† At least 18 hours of electives are to be taken in the humanities and social sciences. See approved list of electives.

‡ Approved by EECS adviser.

§ At least 18 hours of electives are to be taken in the humanities and social sciences. See approved list of electives. At least 3 hours of electives are to taken in 300-level or higher mathematics or Math 265.

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.

CURRICULUM

In order to meet the challenge of a changing technological society, mechanical engineering students are prepared with basic principles for analysis, design, experimental work, and computer utilization. Many technical electives permit students to develop further according to their interest and aptitude.

ADVANCED STUDY

Mechanical engineering students seeking continuing education may go to Graduate School, the School of Business and Administrative Sciences, Law School, and Medical School. The Mechanical Engineering Department has M.S. and Ph.D. programs. Our undergraduate program is good preparation for graduate study. More information on graduate programs may be found in the Graduate School Bulletin.

The faculty of the Mechanical Engineering Department has arranged with the School of Business and Administrative Sciences for a "Three-Two" Program. Students who complete the program receive both a B.S. in Mechanical Engineering and an M.B.A. at the end of their fifth year.

COOPERATIVE EDUCATION PROGRAM

Mechanical engineering students may elect a cooperative education program in which they are employed full time by an industry or governmental agency for a part of the year and in which they are full-time students for a part of the year. Students who need financial aid or who wish to gain engineering experience will find this program attractive.

FINANCIAL AID

There is a substantial number of scholarships and loans available to mechanical engineering students. There are also part-time job opportunities for mechanical engineering students in the Mechanical Engineering Department, part-time employment in the Computing Center, Kirtland AFB, and elsewhere in Albuquerque. In case of need, you should consult the Chairperson of the Mechanical Engineering Department.

STUDENT ACTIVITIES

Mechanical engineering is not all work and study. There are many social opportunities available within the Department and elsewhere on campus. Student organizations of the Department allow students to develop lasting friendships and unity. Students have always enjoyed close relationships with the faculty in the Department. The combination of academic and recreational activities are personally rewarding and satisfying.

CURRICULUM IN MECHANICAL 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)
Econ 200 Prin and Prob	3	(3-0)
ME 201L Intro to Design	3	(2-3)
CE 202L Engr Stat	3	(2-3)
	16	(14-6)

Second Semester

Math 265 Vector Analysis	4	(4-0)
Physcs 262 Gen	3	(3-0)
ME 206L Dynamics	3	(2-3)
EECS 203 Intro to EE I	3	(3-0)
Elective	3	(3-0)
	16	(15-3)

THIRD YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
†ME 300 Mech Engr Anal	3	(3-0)
ME 301 Thermodynamics	3	(3-0)
ME 317 Fluid Mech	3	(3-0)
ME 314L Dyn of Mech Sys	3	(2-3)
EECS 204 Intro to EE II	3	(3-0)
CE 302 Mech of Mat	3	(3-0)
	18	(17-3)

Second Semester

ME 302 Thermochem and Gas Dyn	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

Electives	6	(6-0)
Tech elective	9	(9-0)
Basic science or tech elective	2 or 3	(2-0)
	17 or 18	(17-0)

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 must be approved by the Department Chairperson. They may be selected from ME 341, 350, 352L, 355, 356, 359L, 365, 373, 382, 401, 402, 414, 425, 451-52, 455, 461-62, 480, 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 6 hours** 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, 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. In the energy and power systems option, a major concentration in nuclear engineering is provided. Nuclear engineering graduate programs are available leading to a master of science and to a doctor of philosophy. Students expecting to do graduate work in nuclear engineering should concentrate on physics, mathematics, and nuclear engineering in their undergraduate course work in addition to acquiring a high degree of competence in one of the other branches of engineering.

NUCLEAR ENGINEERING LABORATORIES

The principal equipment in the nuclear engineering laboratories includes the following: AGN-201M critical reactor; power plant simulator; Febetron flash x-ray machine, 20,000 curie Co-60 facility, activation

* Reduced for students placed ahead in freshman mathematics and/or English.
† ME 316 may be taken for this course with approval of the Department Chairperson.

analysis cell; pulsed neutron generators; natural uranium, sub-critical reactor; gamma-ray spectrometer; multichannel analyzers; graphite pile; and supporting radiation counting equipment.

In addition to the well-equipped laboratories on campus, the advanced reactors and radiation equipment of the Sandia Laboratory and Los Alamos Scientific Laboratory are utilized for both instruction and research.

UNDERGRADUATE COURSE WORK

Undergraduate course work in the following areas is highly recommended for the student expecting to do graduate work in nuclear engineering:

Physcs 330 Atomic and Nuclear Physics
Math 312 and 316 Adv Engr Math I and Ord Diff Eq
Ch E or ME 301 Thermodynamics
Ch E 311 or ME 320 Heat Transfer
Ch E 252, ME 317, or CE 331L Fluid Mechanics
Ch E or ME 370 Engineering Materials Science
EECS 203 and 204 Intro to EE I, II
EECS 336 Intro to Digital Computer Programming

In addition, it is recommended that senior year electives be chosen from the following:

Nucl E 420 Fund of Nucl Engr
Nucl E 423L Radiation Measurements and Analysis
Nucl E 430 Intro to Nucl Engr
Nucl E 466 Nuclear Environmental Safety Analysis

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 office at the time they transfer into the College. The College office will assign these students an advisory committee appropriate for the option which the students plan to pursue. The students will work with this committee, rather than a specific department, in planning their program, selecting their electives, etc. It is anticipated that the number and types of options available under this degree program may increase in the future. The curriculum requirements in the three options now available are listed in the following pages.

BIOMEDICAL ENGINEERING OPTION

Biomedical engineering is a relatively new and rapidly 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 202L 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		(0-3)
Math 316 Diff Eq	3	(3-0)
EECS 203 Intro to EE I	3	(3-0)
EECS 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 315L Phys Chem	4	(3-3)
Sp Com 130 Pub Spkng	3	(3-0)
† Tech electives	7	(7-0)
	17	(16-3)

Second Semester

Chem 324 Biochem	3	(3-0)
EECS 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

EECS 406 Bioinstrumentation	3	(3-0)
H&SS elective	3	(3-0)
† Tech electives	7	(7-0)
‡ Elective	3	(3-0)
	16	(16-0)

COMPUTER SCIENCE OPTION

The computer science option is a program of study which covers the design-oriented aspects of computer hardware and software. The course work offered toward the degree is supplemented by laboratory experiments in which students not only gain practical experience in the use of the existing college and university computer facilities but also actively participate in the development of new computer structures and interface equipment. Using engineering problem-solving methods, students of computer science also gain expertise in the development and application of modern computing techniques.

Students in computer science may elect a number of courses in the junior and senior years and, hence, have an opportunity to select supporting work from many disciplines. These elective courses should be chosen in consultation with an adviser to provide the student a comprehensive education with a selected specialization.

Research in computer science is being actively pursued within the College of Engineering. Current research includes the development of an artificial ear, pattern recognition, and hybrid computer designs. Computer science students may have the opportunity to contribute to similar research projects. An active colloquium series is held in the College as part of computer science research. Students are expected to attend and participate in these colloquiums.

In addition to the research activities, students are afforded the opportunity to operate the several laboratory computers themselves. This hands-on experience is limited only by the time available on the various machines, and all students are encouraged to do computer experimentation. Students have an opportunity to use several types of computers during their college careers.

CURRICULUM IN COMPUTER SCIENCE OPTION

Hours required for graduation: 130*

SECOND YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
EECS 238 Comp Logic Dsgn	3	(3-0)
Math 316 Diff Eq	3	(3-0)
EECS 203 Intro to EE I	3	(3-0)
EECS 206L EE Lab I	2	(1-3)
Physcs 161 Gen	3	(3-0)
H&SS elective	3	(3-0)
	17	(16-3)

* Reduced for students placed ahead in freshman mathematics and/or English.

† Technical 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, clinical engineering). These 23 hours will include 10 hours from engineering science courses.

‡ Unrestricted electives.

Second Semester

EECS 337 Minicomputer Sys	3	(3-0)
CIS 154 Fdn Comp Sci	3	(3-0)
Physcs 262 Gen	3	(3-0)
EECS 213 Circ and Sys I	4	(4-0)
EECS 207L EE Lab II	2	(1-3)
	15	(14-3)

THIRD YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
EECS 435 Dsgn Software Sys	3	(3-0)
Math 264 Calculus III	4	(4-0)
CE 202L Statics	3	(2-3)
CIS 300 Struct Prog	4	(3-2)
H&SS elective	3	(3-0)
	17	(16-5)

Second Semester

EECS 437 Operat Sys	3	(3-0)
CIS 355 Prog Lang	3	(3-0)
Sp Com 130 Pub Discourse	3	(3-0)
Math 340 Prob Theory	3	(3-0)
H&SS elective	3	(3-0)
‡Elective	3	(3-0)
	18	(18-0)

FOURTH YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
EECS 440 Sys of Computers	3	(3-0)
EECS 400 Meth Sys Anal	3	(3-0)
†Tech electives	6	(6-0)
H&SS elective	3	(3-0)
	15	(15-0)

Second Semester

EECS 434L Logic Dsgn Lab	2	(1-3)
EECS 444 Microprocessors	3	(3-0)
†Tech electives	6	(6-0)
H&SS elective	3	(3-0)
Elective	3	(3-0)
	17	(16-3)

ENERGY AND POWER SYSTEMS OPTION

With the continuing worldwide growth in population and the growth in automation and appliance use in industrialized and developing countries, the demand for energy and power production is expected to continue to grow at increasingly greater rates. Concurrent with the growth in demand for energy and power is the widespread demand to improve and maintain the environment. The energy and power systems option will prepare students to meet the challenges of these often conflicting demands for employment with the utility and manufacturing industries, architectural engineering firms, research laboratories, and state and federal regulatory agencies.

Some of the current research interests in the College of Engineering are: energy conversion devices, including nuclear reactors, engines, and their components; energy sources, including fossil fuels, solar energy, geothermal energy, and nuclear energy; and energy and power systems analysis, which emphasizes energy conservation.

Technical electives must be approved by the academic adviser to emphasize one or two areas of engineering practice, e.g., chemical, electrical, mechanical, nuclear, geothermal, solar, environmental, or management. Technical electives and unrestricted electives may be used to prepare for graduate work in nuclear engineering or in a field other than engineering, specifically, economics, law, public administration, or business and administrative sciences. Through judicious use of electives, a student can also satisfy the undergradaute requirements for the "Three-Two" M.B.A. Program.

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 202L Statics	3	(3-0)
‡Electives	3	(3-0)
†Tech elective	3	(3-0)
	16	(16-0)

Second Semester

Math 265 Vector Analysis	4	(4-0)
Physcs 162 Gen	3	(3-0)
†Tech elective	3	(3-0)
EECS 203 Intro to EE	3	(3-0)
H&SS elective	3	(3-0)
	16	(16-0)

THIRD YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Ch E-ME 301 Thermodynamics	3	(3-0)
Ch E 252 or ME 317 Fluid Mechanics	3	(3-0)
†Tech electives	6	(6-0)
H&SS elective	3	(3-0)
	15	(15-0)

Second Semester

Ch E or ME 302 Thermodynamics	3	(3-0)
Ch E 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 electives	3	(6-0)
H&SS elective	3	(3-0)
	21	(21-0)

FOURTH YEAR

First Semester

	Cr.	Hrs. Lect.-Lab.
Nucl E 430 Intro to NE	3	(3-0)
EECS 480 Power Sys Anal	3	(3-0)
†Tech elective	3	(3-0)
H&SS electives	6	(6-0)
‡Elective	3	(3-0)
	18	(18-0)

Second Semester

Nucl E 470 or EECS 370 Mat for Nucl or Elec Applications	3	(3-0)
†Tech electives	7	(6-1)
H&SS elective	3	(3-0)
‡Elective	3	(3-0)
	16	(15-1)

ASSOCIATE OF SCIENCE IN PRE-ENGINEERING

The two-year Associate of Science in Pre-Engineering Program is basically the freshman and sophomore pre-engineering program. It requires completion of 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 bachelor degree in engineering or one of the engineering disciplines. 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. The student may also continue his studies in the more specialized areas of engineering, leading to one of the bachelor's degrees in engineering.

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. 15.

DEGREE REQUIREMENTS

1. Completion of all courses in the curriculum (or equivalent), a total of 62 hours.

‡Unrestricted elective.

†Technical electives: These electives will be developed in consultation with an option committee adviser to comprise a meaningful sequence for a stem specialization.

*Reduced for students placed ahead in freshman mathematics and/or English.

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 101L Intro to Engr	4	(1-6)
Math 162 Calculus I	4	(4-0)
	15	(11-9)

Second Semester

Engr 102L Engr Comp Meth 3	3	(2-4)
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	(15-4)

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)
EECS 203 Intro to EE I	3	(3-0)
H&SS elective	3	(3-0)
* Tech elective	3	(3-0)
	15	(15-0)

ENGINEERING TECHNOLOGY

Engineering technology programs are two-year programs leading to an associate degree. The programs are offered at Los Alamos as a part of the Northern New Mexico Branch of The University of New Mexico. Courses are offered in the late afternoon and evening so that a student can work and still participate in the program. Class size is kept small enough to assure that each student can get the individual attention which is needed.

A graduate of the program will have acquired skills in the application of principles needed to implement projects designed by an engineer or a scientist. Emphasis is placed on practical applications of physical principles.

Most graduates of the program are likely to seek full-time employment. Some may wish to continue their studies toward a B.S. in Engineering or some other field, but it should be recognized that only a fraction of the credit for this program is applicable to another degree.

ADMISSION

Each year a limited number of students will be selected for admission. For details of admission procedures and requirements, a prospective student should contact the director of the Northern New Mexico Branch.

INSTRUMENTATION ENGINEERING TECHNOLOGY PROGRAM

FIRST YEAR

First Semester

Math 120 Inter Alg	3
Engr T 132L Intro to Engr Tech	3
Engr T 133L Meas Lab	5
Engr T 134L Drawing Interp	3
Engr T 135L Basic elective	4
	18

Second Semester

Math 150 Alg, Trig, and Calc	4
Engr T 142 Mechanics	3
Engl 101 Wrtg w/Rdgs in Expos	3
Engr T 145L Machine Skills	4
Engr T 146 Instru w/Appl Electronics	5
	19

SECOND YEAR

First Semester

Math 162 Calculus I	4
Engr T 232 Heat	3
Engr T 233L Instru w/Appl Data Col	5
Econ 200 Prin and Prob	3
Social science elective	3
	18

Second Semester

Engr 102L Engr Comp Methods	3
ME 201L Intro to Engr Design	3
Engr T 241L Instru w/Appl Control Sys	5
Engr T 244L Fabrica and Mat	3
Social science elective	3
	17

LASER ENGINEERING TECHNOLOGY PROGRAM

FIRST YEAR

First Semester

Engr T 132L Intro to Engr Tech	3
Engr T 133L Meas Lab	5
Engr T 161 Intro to Lasers	3
Engr T 135L Basic elective	4
Math 120 Interm Alg	3
	18

Second Semester

Math 150 Alg, Trig, and Calc	4
Engr T 142 Mechanics	3
Engl 101 Wrtg w/Rdgs in Expos	3
Engr T 162 Optics	3
Engr T 146L Instru w/Appl Elec	5
	18

SECOND YEAR

First Semester

Math 162 Calculus I	4
Engr T 261 High Curr and Volt Tech	3
Engr T 233L Instru w/Appl Data Col	5
Econ 200 Prin and Prob	3
Engr T 262 Adv Electronic Circ	3
	18

Second Semester

Engr 102L Engr Comp Methods	3
ME 201L Intro to Engr Design	3
Engr T 263 Laser Electro-optic	3
Engr T 264L Laser Appl Lab	2
Engr T 265 Laser Design, Sys, and Proj	3
Social science elective	3
	17

*Selected from departmental required courses.

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 Advisement Center.

You should also read carefully the general academic regulations of the University (p.17) and the listing of courses offered by the College. These are under nine headings:

Art Studio p. 126	Fine Arts p. 173
Art History p.127	Music pp. 205-207
Dance p. 228	Music Education pp. 207-208
Film p. 228	Theatre Arts pp. 226-228

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. 31.

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) Passing the College English Placement Test (CEPT) with a score equivalent to 25 on the ACT, or
   (c) Completion of English 101 with a grade of C or better.

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. Upon making application for transfer in the University College offices, you will be referred 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.

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.
4. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.

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.

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 his major to transfer to another program.**

No student may undertake a program in excess of 20 hours without prior written permission of the Dean of the College. Enrollment in more than 20 hours without such prior permission will lead to disenrollment.

If your grades are low, if you have had academic difficulties in the past, or if you are holding down a job in addition to your studies, we strongly advise you to limit your program to no more than 12 or 15 hours.

DEPARTMENTAL HONORS

Students interested in graduating with Departmental Honors should read carefully the guidelines on p. 30 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; (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.

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 elsewhere in the catalog.

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 student who anticipate futher study at the graduate level. If you enroll in this program, you should read carefully the paragraph on p. 28 (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. Both studio courses and art history courses are part of the major field of study.

If you wish to take studio courses without making the professional commitment that is implicit in this curriculum, you are best 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 pursue a course of study leading to a B.U.S. degree (see p. 32), or 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 18 hours of upper division work is in the form of tutorial instruction. Students whose performance, as evaluated after five semesters of full-time study, does not qualify them for the tutorial 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 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 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. 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 130, 201, and 202, to be taken in the freshman and sophomore years); and — 18 hours
   b. 52 hours in studio courses, including 123 in the freshman year, and a minimum of 18 hours of tutorial courses (no fewer than 6 hours each of the last three semesters). Many areas of special study require specific sequences of courses and corequisites which you must observe. The department adviser can advise you of these. — 52 hours
3. Additional courses in any field, including art. — 10 hours

Total 128 hours

B.F.A. TUTORIAL PROGRAM

At the end of five semesters (the middle of the junior year) all students in the B.F.A. program with 3.0 GPA whose portfolio is acceptable to the departmental tutorial committee may enter the tutorial program. Those who do not qualify, or those who do not wish this type of instruction, must enter programs other than the B.F.A.

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 technique and theoretical and humanistic breadth rather than narrow technical specialization. Normally, the student will take a minimum of 6 hours of tutorial in each of the last three semesters of full-time study and preferably will work with a single tutor no more than 6 hours.

Before becoming eligible for the tutorial program the student must have taken a minimum of 66 hours of preparation, including Art 123, 130, 201, and 202, a minimum of 18 hours (usually more, including corequisites) of work in a specific area, 24 hours in courses offered by departments of the College of Arts and Sciences (including 9 hours of English) and other courses in the College of Fine Arts, a minimum of 6 hours of electives in art, and Art 423. Art 423, which deals with advanced problems in perception and theory, is designed to prepare students for tutorial work and must be taken and passed by all those entering the program.

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 Art, 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 130, 201, 202, and a minimum of 24 hours in courses numbered 300 or above; and — 33 hours
   b. 15 hours in studio courses, including 123. — 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 130, 201, and 202; and — 15 hours
   b. 33 hours in studio courses, including 123. — 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. 46); 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 regulations of the National Association of Schools of Music.

*Courses in the General Honors Program may be used to satisfy Arts and Sciences requirements except for the specific courses stated above.

MUSIC MAJORS

Majors in music are described below. Note that in addition to stated course requirements you must also satisfy general College and University requirements for graduation. For minor study in music, refer to p. 207.

PREPROFESSIONAL CURRICULUM

Programs in music performance or music pedagogy 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. 28 (Scholastic Standards) which permits the faculty to exclude from the program any student whose grade average in his 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; and/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 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 (Note: Majors in vocal performance and vocal pedagogy must complete 18 hours in some combination of French, German, and Italian.) — 30 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. 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. 24 hours in applied music;
   b. 24 hours in music theory, including 105, 106, 107, 108, 205, 206, 207, 208, 309, 310, 453, and either 405 or 406;
   c. 8 hours in music history, including 261, 262, and 449;
   d. 2 hours in conducting;
   e. 8 hours in ensemble (see departmental handbook); and
   f. 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 (473)
   - 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
   - 5 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:
   - 8 hours in music theory
   - 2 hours in conducting
   - 4 hours in music history
   - 10 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.

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 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. 23 hours in music theory (see curriculum p. 206);
   b. 8 hours in music history (see curriculum p. 206); plus 10 hours of other courses in music history;
   c. 8 hours in applied music, including 4 hours in piano and 4 elective hours;
   d. 8 hours in ensemble; and
   e. 11 hours in music electives. — 68 hours

   Total 128 hours

CURRICULUM IN MUSIC EDUCATION

Prospective public school music teachers may enroll either in the College of Fine Arts or the College of Education. In either college the degree you will receive upon completion of requirements will be the Bachelor of Music Education. In addition to the specific curriculum given below, you must satisfy requirements for admission to a teacher education program appearing on pp. 45-46 of this catalog and the special requirements found in the departmental handbook. Completion of the degree qualifies you for the certificate to teach music in grades 1 through 12.

FIRST YEAR

First Semester

Psych 101	3
Theory II	2
Ear-Training II	2
Hist 101	3
Music Ed 194	1
Applied music	3
Ensemble	1
	15

Second Semester

Engl 101 Wrtg /Rdgs in Expos	3
Theory III	2
Ear-Training III	2
Hist 102	3
Sp Com 270	3
Applied music	3
Ensemble	1
	17

SECOND YEAR

First Semester

Music 261	3
Theory IV	2
Ear-Training IV	2
Engl 102 Wrtg /Rdgs in Lit	3
Ed Fdn 290	3
Ensemble	1
Applied music	3
	17

*Courses in the General Honors Program may be used to satisfy Arts and Sciences requirements except for the specific courses stated above.

Second Semester

Music 262	3
Theory V	2
Ear-Training V	2
Music Ed 294	2
Ed Fdn 300	3
Applied music	3
Ensemble	1
	16

THIRD YEAR

First Semester

Music 453	2
Music Ed 446	2
Engl elective	3
Fine arts elective	3
Music 363	2
Applied music	3
Ensemble	1
	16

Second Semester

First 8 weeks

Music Ed 313	2
Music Ed 366	2
Music Ed 344	2
Ensemble	1
Applied music	3
Music 364/365	2
	12

Second 8 weeks

Music Ed 400 (for first 4 weeks)	3
Music Ed 461 (for second 4 weeks)	3
	6

FOURTH YEAR

First Semester

Music 309	2
Music Ed 451	3
Natural science (lab)	4
Humanities elective	3
Applied music	2
Ensemble	1
	15

Second Semester

Music 310	2
Music 406	2
Natural science (lab)	4
Fine arts elective	3
Applied music	2
Ensemble	1
	14
Total	128

THEATRE ARTS

The majors in theatre arts offered by the College of Fine Arts provide for an emphasis in theatre, dance, or film. A description of the major in theatre arts for teacher certification may be found at the end of this section (see Curriculum for Teacher Education); for minor study requirements, refer to the Courses of Instruction section of this catalog.

The programs of studies for students majoring in theatre arts are founded upon the collaborative process inherent in the nature of theatrical art. In the basic required courses, production work is an integral part of classroom instruction, and students are expected to participate in all phases of such work in departmental productions.

Students who contemplate majoring in theatre arts should be aware that the Department of Theatre Arts has begun the process of implementing major changes in its programs and curricula and, therefore, should not proceed with a program of studies without consulting advisers in both the Advisement Center of the College of Fine Arts and the Department of Theatre Arts.

Please note that in addition to the specific course requirements listed below you must satisfy all 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 substantially below 3.0 in their major,
2. Students who fail to demonstrate reasonable progress in their personal professional development in theatre arts, particularly by the end of their sophomore year of studies, and/or
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 major in theatre arts that is offered under this curriculum is designed for students who anticipate further study at the graduate level; it leads to the Bachelor of Fine Arts.

Within this curriculum two programs are offered: a major in theatre arts and a major in theatre arts with an emphasis in dance.

MAJOR IN THEATRE ARTS

1. Courses outside the major:
   a. 30 hours selected from courses offered by the departments of the College of Arts and Sciences, of which at least 9 hours must be English 102, 352, and 353; 6 hours in History 101, 102;* — 30 hours
   b. 6 hours selected from other departments of the College of Fine Arts (art, art history, film, fine arts, and music) 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. Courses in the major:
   a. Acting emphasis: TA 120-121, 220-221, 320-321, 327, 335-336, Film 210 or 327, and 19 hours of additional theatre arts courses selected with advisement.
   b. Technical production/design emphasis: TA 120-121, 220-221, 322-323, 327, 335-336, Film 210 or 327, and 19 hours of additional theatre arts courses selected with advisement. — 70 hours
3. Additional courses in any field. — 10 hours

Total 128 hours

MAJOR IN THEATRE ARTS WITH DANCE EMPHASIS

1. Courses outside the major:
   a. 30 hours selected from courses offered by the departments of the College of Arts and Sciences, of which at least 9 hours must be English 102, 352, and 353; 6 hours in History 101, 102;* and — 30 hours
   b. 6 hours selected from other departments of the College of Fine Arts (art studio, art history, film, fine arts, and music) 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. Courses in the major:
   a. TA 120 and 358; Dance 108-109 or the equivalent, 212, 222, 262-263, 313, 314, and one three-hour course in film. — 29 hours
   b. 25 hours in dance technique (ballet and/or modern) selected with advisement and taken on a schedule averaging at least seven class sessions per week beginning in the sophomore year. — 25 hours
   c. 20 hours in improvisation, dance forms, composition and choreography selected with advisement. — 20 hours
   — 74 hours
3. Additional courses in any field. — 6 hours

Total 128 hours

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, with less concentration in drama and theatre.

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 English 102, 352, and 353; 6 hours in History 101, 102;* and — 39 hours
   b. 6 hours selected from other departments of the College of Fine Arts (art studio, art history, film, fine arts, and 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

*Courses in the General Honors Program may be used to satisfy Arts and Sciences requirements except for the specific courses stated above.

2. Courses in the major:
   a. TA 120-121, 220-221, 327, 335-336; and
   b. 9 hours of additional theatre arts courses numbered above 300. 48 hours
3. Additional courses in any field. 20 hours

Total 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 on pp. 45-46 of this catalog for admission to a teacher education program, as well as those stated on p. 44 for admission to student teaching and (b) meet the general education requirements of the Department of Secondary Education set forth on pp. 46-47. 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 320
      24 hours of courses to complete the requirements of a certifiable teaching minor in a field of Arts and Sciences; and
   b. 6 hours selected from other departments of the College of Fine Arts (art, art history, film, fine arts, and music) or from the School of Architecture and Planning; and
   c. 9 hours consisting of Ed Fdn 290 and 310 and Sec Ed 362 (Junior Year Module II); and
   d. 6 hours of Sec Ed 461 (Student Teaching). 60 hours
2. Courses in the major:
   TA 120-121, 220-221, 240, 335-336, 375, 385, 403 or 404, and 415-416;† and 54 hours
3. Additional courses in any field.‡§ 14 hours

Total 128 hours

TAMARIND INSTITUTE

Clinton Adams, Director

Tamarind Institute, founded in June of 1970 as a division of the College of Fine Arts, is a professional center for training, study, and research in the art of lithography. At the Institute distinguished artists are provided an opportunity to create original lithographs under conditions that fulfill the highest esthetic and ethical traditions of the art.

Fellowships and assistantships are available to qualified individuals who seek to enter careers as master printers or as as print curators in art museums, private galleries, or professional workshops. Artists, printers, and curators in the Institute have full access to the resources of the University, including the Fine Arts Library and the University Art Museum. The library has considerable strength in the history and practice of lithography, and the museum has an extensive collection of original lithographs by major artists of the nineteenth and twentieth centuries.

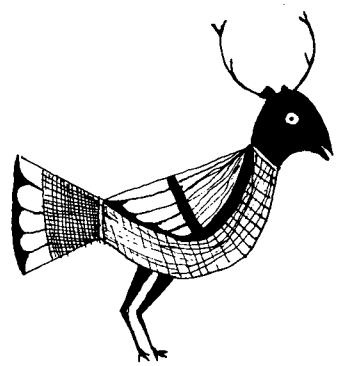
Courses in the economic and management techniques needed by artisans working in professional ateliers are offered in cooperation with the School of Business and Administrative Sciences. Courses in the history of the graphic arts and in the care and preservation of fine prints are offered by the Department of Art.

Tamarind Institute is successor to Tamarind Lithography Workshop, Inc., of Los Angeles, California.

† TA 415-416 constitute 6 hours of the required 24 in teacher education.

‡ Students are strongly urged to consider electing courses to go beyond requirements for a certifiable minor and complete a second teaching major and to include a course in special methods of teaching in that field.

§ Most students will need to use some of these hours to complete the general education requirements of the Department of Secondary Education.



THE GRADUATE SCHOOL

GRADUATE WORK leading to the master's degree is offered in the following fields: anthropology, architecture, art, biology, chemistry, communicative disorders, comparative literature, computing and information science, economics, education (administration, art, elementary, foundations, guidance, health, music, physical, recreation, secondary, special, teaching business subjects, teaching English, teaching home economics, teaching industrial subjects, teaching mathematics, teaching science, teaching Spanish), engineering (chemical, civil, electrical, mechanical, nuclear), English, French, geography, geology, history, Latin-American studies, linguistics, mathematics, medical sciences, music, philosophy, physics, political science, Portuguese, psychology, public administration, sociology, Spanish, speech communication. 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, 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 chairperson of the department concerned for information on these particular programs.

ADMISSION, FELLOWSHIPS, TRAINEESHIPS, AND ASSISTANTSHIPS

Graduates of any accredited college or university may apply for admission to the Graduate School. All communications regarding admission should be addressed to the Dean of the Graduate School.

A formal application is required of all students, including graduates of The University of New Mexico, who seek admission to the Graduate School. Application blanks may be obtained by writing to the Graduate School. The Graduate School Bulletin may be obtained at a cost of $2.00 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 their applications, transcripts, and the $15.00 application fee on file in the Graduate Office at least two months in advance of the beginning date of the session in which they plan to enroll. The final deadlines for receipt of applications and all required credentials are: for fall semester, July 1; for spring semester, November 15; for the summer session, April 15. No student is assured of admission until he or she has received an official offer of admission from the Dean of the Graduate School.

Although each application is reviewed individually, in general an overall 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.

Assistantships are available for some well-qualified, degree-seeking graduate students. **Application deadline for financial aid is January 31.**

While the Graduate School reserves the right to refuse admission to any student for scholastic or nonscholastic reasons, such refusal will in no case be based upon race, color, sex, religion, or national origin.

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 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 School Bulletin;
5. obtains **in advance** the approval of the major department and the Dean of the Graduate School.

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 Graduate School, 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.

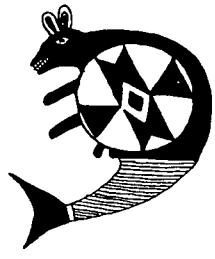
The University accepts no correspondence credit toward its advanced degrees.

OFF-CAMPUS RESIDENCE CENTERS

The University offers graduate credit for work taken at The University of New Mexico Graduate Center at Los Alamos and at the Santa Fe Graduate Center. For information concerning these centers, see p. 86.

INFORMATION

For further information consult the Graduate School Bulletin, the Graduate School, or the department 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 made 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.

ADDITIONAL 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 an $8.00 materials fee.

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 $1.00 from the University of New Mexico Bookstore, Albuquerque, New Mexico 87131.

ADMISSION

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, including laboratory, 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, regardless of whether they have taken it in past years. 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, the Coordinated Transfer System (COTRANS); 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.

ALLIED HEALTH SCIENCES PROGRAMS

ASSOCIATE OF ARTS IN COMMUNITY SERVICES

An Associate of Arts in Community 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, school-community liaison workers, public health assistants, clinic interviewers.

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 Community Service Worker Program.

For information concerning eligiblity in this program contact The University of New Mexico School of Medicine's Community Service Worker Program, 2701 Frontier NE, Albuquerque, New Mexico 87131, or call 277-5428.

ADMISSION

Applicants must complete Community Service 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 CSW Program, and
3. be interviewed by the director or a designated staff member of the participating community agency.

CURRICULUM

FIRST YEAR

First Semester

CSW 102 Prin of Interviewing	2
Engl 101 Wrtg /Rdgs in Expos	3
CSW 100 Intro to Comm Serv	3
CSW 104 Prin of Hum Behav	3
CSW 150 Clin Exper in CS	3-5
	14-16

Second Semester

CSW 109 Tech of Assessment and Interv	3
Ed Fdn 300 Human Gwth and Dev	3
Engl 102 Wrtg /Rdgs in Lit	3
Humanities or fine arts requirement	3
CSW 151 Clin Exper in CS	3-5
	15-17

SECOND YEAR

First Semester

CSW 105 Group Dynam	4
Soc 101 Intro to Micro-Soc	3
Humanities or fine arts requirement	3
Elective	3
CSW 250 Adv Clin Exper in CS	3-5
	16-18

Second Semester

H Ed 171 Pers and Comm Hlth	3
Soc 211 Social Prob	3
Electives	6
CSW 251 Adv Clin Exper in CS	3-5
	15-17

DEGREE REQUIREMENTS

1. Enrollment in UNM School of Medicine, Community Services Program
2. A UNM scholarship index of 2.0
3. A minimum of 66 hours of earned credit including:
   a. CSW 100, 102, 104, 105, 109, 150, 151, 250, and 251—33 hours
   b. H Ed 171—3 hours
   c. Engl 101 and 102 (communications)—6 hours
   d. Soc 101 and 211 (social science)—6 hours
   e. Ed Fdn 300—3 hours
   f. One course from Hist 100, 161, 162, 360, or Phil 101 (humanities)—3 hours
   g. One course from Arch 101, 281, 282, Art Hist 101, 130, TA 115, 116, Music 139, 140, 171, or Film 210 (fine arts)—3 hours
   h. Electives, a minimum of 9 credit hours, may be chosen from CSW courses (CSW 106, 110, 111, and 149) or from general catalog, not to include more than 3 hours of PE and/or applied fine arts.

MEDICAL LABORATORY SCIENCES

The following medical laboratory sciences programs are offered through the UNM School of Medicine under the direction of the Allied Health Sciences Center:

1. An integrated two-year program for medical laboratory technicians leading to the degree of Associate of Science in Laboratory Technology (see "University College")
2. A twelve-month program in medical technology which satisfies the fourth-year requirement of the curriculum leading to the degree of Bachelor of Science in Medical Technology

MEDICAL LABORATORY TECHNICIAN PROGRAM

The degree of Associate of Science in Laboratory Technology is offered by the University College. This program includes academic subjects in biology and chemistry in conjunction with the prescribed curriculum for medical laboratory technicians offered by the Laboratory Sciences Division of Allied Health Sciences in the School of Medicine, which is approved by the AMA and the National Accrediting Agency for

Clinical Laboratory Science (NAACLS). Graduates of this program are eligible to take the examination for certification as medical laboratory technicians (MLT) given by the Board of Registry of the American Society of Clinical Pathologists (ASCP). They are capable of performing many of the various medical laboratory procedures under the supervision of medical technologists. (See University College section of this catalog for admission and degree requirements.)

CURRICULUM

(Also see University College section of this catalog.) The curriculum is designed not only to prepare the student for the MLT categorical certification but also to provide a liberal educational background which the student may apply toward a baccalaureate degree program if he chooses to do so. The following specific courses in medical laboratory sciences are required: Med Lab Sci 100, 101, 102, 103, 104, 201, 202, 203, 204, 251, 252, 253, and 254. (Descriptions of courses will be found in the Courses of Instruction section of this catalog.)

MEDICAL TECHNOLOGY PROGRAM

Medical technologists are the professional laboratory workers whose broad background of college science and clinical laboratory training provide the ingredients necessary for their professional responsibilities. They perform the increasingly complex diagnostic procedures which aid the physician in his diagnosis, prevention of disease, patient surveillance during therapy, and research. Many opportunities exist in supervisory, teaching, and research assistant roles.

The School of Medicine, Allied Health Sciences Center, offers a program leading to the Bachelor of Science in Medical Technology. In this program the student follows a prescribed curriculum which requires at least three years in the College of Arts and Sciences and a twelve-month course in medical technology offered by the Laboratory Sciences Division of Allied Health Sciences in the School of Medicine and which is approved by the AMA Council on Medical Education and the National Accrediting Agency for Clinical Laboratory Science (NAACLS). It meets the requirements of the fourth year of study leading to a B.S. in Medical Technology as outlined at the following New Mexico colleges or universities: The University of New Mexico, The University of Albuquerque, Highlands University, Eastern New Mexico University, New Mexico State University, and College of Santa Fe. Students may also be accepted from other universities which agree to give full credit for the program toward a B.S. in Medical Technology. Parent institutions award the degree upon satisfactory completion of the medical technology program. Upon completion of this program, the student is eligible to take the examination for certification offered by the Board of Registry of the American Society of Clinical Pathologists (ASCP). Students who complete the prerequisite courses in the Arts and Sciences portion of this program are hereby notified that the completion of these courses does not necessarily mean admission to the twelve-month course in medical technology in the School of Medicine.

Upon completion of the three years of academic study, a student is eligible to apply for the twelve-month medical technology training program if he:

1. Has completed 96 hours, of which 4 may be PE, of the prescribed program in medical technology as outlined below, since 32 hours of credit are allowed in the last twelve months of study in the School of Medicine toward the degree requirements.
2. Has a minimum of 2.0 GPA in all subjects and a minimum grade of C in all biology and chemistry courses.

UNM students planning to take their training in some approved medical technology school other than the one on the UNM campus must complete a minimum of 107 hours in order to complete the senior residence requirement.

The order of courses in the prescribed program should be followed as closely as possible. Students wishing to follow this program should make their intention known to the medical technology adviser as early in their student careers as possible.

PRESCRIBED PROGRAM FOR MEDICAL TECHNOLOGY

FIRST YEAR

First Semester

Chem 121L Gen or 131L	4
Biol 121L Prin	4
* Math 180	3
Engl 101 Wrtg /Rdgs in Expos	3
A&S group requirement elective	3
	17

Second Semester

Chem 122L Gen or 132L	4
Biol 122L Prin	4
Engl 102 Wrtg /Rdgs in Lit	3
A&S group requirement electives	6
	17

SECOND YEAR

First Semester

Chem 301-303L Organic	4
Biol 350L Gen Bact Intro Microbiol	4
A&S group requirement electives	6
	15

Second Semester

Chem 203-304L Organic	4
Biol 454L Path Bact	5
A&S group requirement electives	6
	14

THIRD YEAR

First Semester

Physcs 151-153L Gen	4
† Chem 253 Quant Analysis	4
A&S group requirement elective	3
‡ Electives	6
	17

Second Semester

Physcs 152-154L Gen	4
Biol 429L Cell Physiol	4
‡ Electives	9
	17

FOURTH YEAR

First Semester

Med Lab Sci 401 Clin Chem	5
Med Lab Sci 402 Clin Hemat	4
Med Lab Sci 403 Clin Micro	5
Med Lab Sci 404 Clin Immunohemat	2
Med Lab Sci 405 Clin Urin	1
Med Lab Sci 406 Clin Serol	1
	18

Second Semester

Med Lab Sci 451 Pr Clin Chem	4
Med Lab Sci 452 Pr Clin Hemat	3
Med Lab Sci 453 Pr Clin Micro	4
Med Lab Sci 454 Pr Clin Immunohemat	2
Med Lab Sci 455 Pr Clin Urin	1
	14

Total number of hours required: 128, 4 of which may be PE activity

After completing the above course program and completing a twelve- month course in medical technology at an approved school, the student will submit a transcript of his work (to complete his application) for the degree of Bachelor of Science in Medical Technology from The University of New Mexico.

Those students who do not follow the prescribed curriculum listed above must meet the minimum requirements for admission to the medical technology program. Minimum educational requirements are three years (96 semester hours or 144 quarter hours) of collegiate training in any college or university approved by a recognized regional accrediting agency. The three years should be acceptable as the first three years of a baccalaureate program and upon completion of the medical technology program should culminate in the award of the baccalaureate degree. Individual colleges and universities will vary in total credit-hour requirements.

During the above three years, the following are required:

1. Chemistry—a minimum of 16 semester hours (24 quarter hours) is required. This must include one full year of general college chemistry, including lecture and laboratory, one course in quantitative analysis, and one course in organic or biochemistry.
2. Biological sciences—a minimum of 16 semester hours (24 quarter hours) acceptable toward a major in biological science is required. All required biological sciences must include lecture and laboratory. Survey courses are not acceptable. At least one semester of a basic bacteriology course, including lecture and laboratory, must be included, with courses in pathogenic

* Math 150 or the equivalent as determined by the placement examination given by the Department of Mathematics and Statistics.

† Not required if Chem 121L and 122L taken.

‡ Immunology, genetics, computer science, business management, and instrumentation are recommended.

bacteriology, immunology, genetics, cell physiology, and physics being highly recommended.
3. Mathematics—a minimum of one semester (one quarter) of college mathematics is required, preferably biostatistics or calculus.
4. Certification of the proficiency of a student by a college in any of the above required subjects may be accepted in lieu of these re quirements; however, the student must still satisfy the three-year requirement of 96 semester hours (144 quarter hours).
5. A grade of C or better must be earned in all chemistry, biology, and Med Lab courses.
6. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.

Two additional categories of candidates that meet the following requirements may be accepted to the program:

1. Students who possess a baccalaureate or higher degree from an accredited college or university and meet the science requirements outlined below. This qualifies the candidate to sit for the national registry examination of the American Society of Clinical Pathologists to become a registered medical technologist (MT, ASCP).
2. Students enrolled in the program leading to the degree of Bachelor of University Studies (B.U.S.) at The University of New Mexico who meet the educational requirements outlined and register their intent with the Director of Laboratory Sciences Programs upon transfer from the University College into the B.U.S. program.

Undergraduate students transferring to UNM and students who have already earned their baccalaureate degree will meet the UNM residence requirement if admitted to the twelve-month medical technology program since 32 credit hours are completed in this year of work.

Students are advised to devote considerable thought to possible opportunities for graduate studies in this field when choosing their undergraduate program.

CURRICULUM

Md Lab 401-406 Theory and Practice of Medical Technology (preclinical)

Md Lab 451-455 Practice in Medical Technology Procedures (clinical)

(Description of courses offered will be found in the Courses of Instruction section of this catalog.)

APPLICATION AND ADMISSION PROCEDURE

1. Entering freshmen and preprofessional transfer students should obtain information pertaining to admission to The University of New Mexico from the Dean of Admissions.
2. Those students possessing preprofessional requirements listed above and desiring to enter the medical technology program at The University of New Mexico School of Medicine should communicate with the Director, Medical Technology Program for preliminary advisement.
3. All applications and credentials required for the medical technology program must be submitted by January 15.

FINAL APPLICATION CHECKLIST FOR LABORATORY SCIENCES, MEDICAL TECHNOLOGY PROGRAM

1. Send application and required credentials to the Director, Laboratory Sciences Program prior to the January 15 deadline. Official transcripts of collegiate training must be sent directly from each institution previously attended.
2. An appointment for personal interview with the Admissions Committee of the Laboratory Sciences Program will be arranged after receipt of application and transcript and after the January 15 deadline.
3. Selection of applicants for the July class will be made by the Admissions Committee of the Laboratory Sciences Program, and all applicants will be notified of their acceptance or nonacceptance.

TUITION

Tuition for preprofessional courses is listed in the catalog under "Student Expenses." Tuition for the professional program in medical technology:

	N.M. Residents	Nonresidents
Md Lab 401-406	$260.00	$758.00
Md Lab 451-455	260.00	758.00
Total	$520.00	$1,516.00

In addition to tuition, housing, and books students in all laboratory sciences programs are required to purchase lab coats, laboratory manuals, and supplies (approximate cost $100.00).

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 laboratory sciences programs. Information may be obtained at the Student Aids Office and the office of the Director of the Laboratory Sciences Programs.

Graduates of the program will be eligible and expected to take the national examination for medical technologists administered by the American Society of Clinical Pathologists.

AFFILIATED TEACHING HOSPITALS

The practical clinical rotation in the medical technology curriculum is provided by hospitals located in Roswell, Clovis, Santa Fe, Los Alamos, Gallup, and the following hospitals in Albuquerque: Bernalillo County Medical Center, Veterans Administration, Presbyterian Medical Center, St. Joseph, Bataan, and Lovelace Clinic. Student assignments to hospitals will be made by a committee composed of the Director of the Laboratory Sciences Program and the educational coordinator of individual hospitals. Student preferences will be given as much consideration as possible.

INFORMATION REQUESTS

Communications regarding information and applications should be addressed to the Director of Medical Laboratory Services, The University of New Mexico, Albuquerque, New Mexico 87131.

PHYSICAL THERAPY

Individuals of all ages with medical, neurological, surgical, or orthopaedic problems are referred to the physical therapist for evaluation and treatment. Through the use of physical measures such as heat, cold, water, light, electricity, ultrasound, massage, and therapeutic exercise, the physical therapist assists the patient to achieve maximum function.

Anatomical, physiological, psychological, and medical knowledge are blended with knowledge of the theory and rationale underlying physical therapeutic procedures so that the total individual may be considered in planning and carrying out the treatment program. Theoretical and clinical education are concurrent and are designed to prepare an individual skilled in the performance of the varied activities of the qualified physical therapist. Evaluation, treatment, instruction of parents and families in carrying out home therapy, supervision of physical therapist assistants and aides, administration of the physical therapy department, and consultation are all facets of the job performed by the physical therapist in a wide variety of health care settings.

The University of New Mexico offers a four-year curriculum leading to a Bachelor of Science in Physical Therapy, awarded by the School of Medicine. The Division of Physical Therapy is in the Department of Orthopaedics and is accredited by the Council on Medical Education of the American Medical Association and the American Physical Therapy Association.

Students who successfully complete the program are eligible for licensure by examination in New Mexico and all other states and for membership in the American Physical Therapy Association.

REQUIREMENTS FOR ADMISSION TO THE PHYSICAL THERAPY PROGRAM

Minimum educational requirements are two years (60 semester hours) of acceptable college work from a university or college approved by a recognized accrediting agency. Distribution of hours should be as follows:

1. Biology—a minimum of 8 semester hours of general biology, including laboratory.
2. Chemistry—a minimum of 8 semester hours of general chemistry, including laboratory.
3. Physics—a minimum of 8 semester hours of general physics, including laboratory.
4. Psychology—a minimum of 9 semester hours.
5. Additional hours in communications, humanities, social sciences, fine arts, foreign language or mathematics (6 credits each in five of these six areas). See College of Arts and Sciences for courses which fulfill these group requirements.

Twelve students are admitted to the program each year. The program begins in the summer session. Students are admitted at the junior level.

Application may be made when the student is enrolled in courses which will complete the prerequisites. A 3.2 cumulative grade-point index is recommended for applicants to this program.

Consideration is given to academic achievement and personal qualifications in the selection process. A personal interview by members of the Admissions Committee may be required. Acceptance will be provisional, depending upon satisfactory completion of courses in progress.

Application is made directly to the Division of Physical Therapy.

DEGREE REQUIREMENTS

A Bachelor of Science in Physical Therapy will be awarded by the School of Medicine to students who:

1. Complete 132 acceptable semester hours (grades below C not acceptable) and
2. Complete satisfactorily the final 15 weeks of clinical education (6 semester hours).
3. Complete the Undergraduate Program Test Battery (UAP), including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.
4. Are recommended for the degree by the faculty.

TUITION AND EXPENSES

Tuition costs are the same as those listed in the catalog under "Student Expenses." The cost of uniforms, books, and living expenses during the summer clinical affiliations must be assumed by the student. Financial aid may be available through the Office of Student Aids.

AFFILIATED FACILITIES

The physical therapy student receives his clinical education at several excellent facilities in New Mexico, including Bernalillo County Medical Center, the Veterans Administration Hospital, Lovelace-Bataan Medical Center, St. Joseph Hospital, Albuquerque Orthopaedic Associates, and Kirtland Air Force Base Hospital in Albuquerque; the New Mexico Rehabilitation Center in Roswell; and Carrie Tingley Hospital for Crippled Children in Truth or Consequences.

SUGGESTED CURRICULUM

FIRST YEAR
(Preprofessional)

First Semester

Engl 101 Wrtg w/Rdgs in Expos	3
Biol 121L Prin	4
Chem 121L Gen	4
* Math 121, 150, or 180	3-4
Psych 101 Gen	3
	17-18

Second Semester

Biol 122L Prin	4
Chem 122L Gen	4
Psych 102 Gen	3
† Electives (College of Arts and Sciences group requirements	6
	17

SECOND YEAR
(Preprofessional)

First Semester

Psych 230 Psych Adjust or 321 Dev Psych	3
Physcs 151 Gen	3
Physcs 153L Gen Physcs Lab	1
† Electives (College of Arts and Sciences group requirements)	9
	16

Second Semester

Physcs 152 Gen	3
Physcs 154L Gen Physcs Lab	1
† Electives (College of Arts and Sciences group requirements	12
	16

THIRD YEAR
(Professional)

Summer Session

PT 321L Hum Anat	5
	5

Fall Semester

PT 301L Ther Ex I	3
PT 305L Ther Proc I	2
PT 341 Surv Med Sci I	2
PT 351L Eval Proc I	3
PT 370 Kines/Funct Anat	2
PT 371L Clin Ed I and Sem	2
	14

Spring Semester

PT 302L Ther Ex II	3
PT 306L Ther Proc II	2
PT 310 Prof Dev I	2
PT 322 Hum Neuroanat	2
PT 342 Surv Med Sci II	2
PT 362L Hum Physiol	4
PT 372L Clin Ed II	1
	16

FOURTH YEAR
(Professional)

Fall Semester

PT 401L Ther Ex III	5
PT 421 Psych Disab	2
PT 431 Hlth Care Sys and Deliv	1
PT 441 Surv Med Sci III and Sem	3
PT 451L Eval Proc II	2
PT 471L Clin Ed III	3
	16

Spring Semester

PT 402L Ther Ex IV	3
PT 432 Prof Dev II	2
PT 442 Surv Med Sci IV	2
PT 472L Clin Ed IV	3
PT 480 Admin/Suprv	2
Elective	3
	15

Summer Session

PT 475L Clin Ed V 3 five-week affiliations	6
	6

INFORMATION REQUESTS

Communications regarding information and application should be addressed to the Director of Physical Therapy, The University of New Mexico, Albuquerque, New Mexico 87131.

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 for radiologic technologists, leading to an Associate of Science in Radiologic Technology.
2. A one-year program for nuclear medicine technologists, leading to an Associate of Science in Nuclear Medicine Technology.

ASSOCIATE OF SCIENCE IN RADIOLOGIC TECHNOLOGY

A two-year program beginning in June of each year is offered to high school graduates and is limited to ten students per year. This program prepares the allied health professional to perform complex radiographic procedures which assist the radiologist in disease investigation and diagnosis. Both clinical and didactic phases of the curriculum are provided by the affiliated hospital, Bernalillo County Medical Center. Graduates are required to take the national certifying examination for radiologic technologists prepared by the American Registry of Radiologic Technologists.

ADMISSION REQUIREMENTS

1. Be at least 18 years of age (ERDA regulation).
2. Meet UNM entrance requirements.
3. Personal interview with the program faculty.
4. Application on file with the Director, January 31 prior to the June entrance.

CURRICULUM‡

FIRST YEAR

Summer Session

RT 103 Prof Orient and Ethics	1
RT 107 Prin of Rad Expos	3
RT 105 Med Terminology	1
RT 205 Rad Protection	1

*Prerequisite for Physcs 151.
†Recommend advisement for appropriate courses for physical therapy.
‡These courses can be taken only by those enrolled in the radiologic sciences programs.

Fall Semester

RT 151 Hum Struc and Func	3
RT 161 Radiograph Proced I	3
RT 020 Radiograph Film Eval	CR/NC
Math 120 or 121 Inter or Col Alg	3
RT 108 Clin Rad Tech I	4

Spring Semester

RT 101 Rad Physcs	4
RT 163 Radiograph Proced II	3
RT 020 Radiograph Film Eval	CR/NC
RT 121 Meth of Patient Care	1
RT 010 Research Prob	CR/NC
RT 164 Clin Rad Tech II	4

SECOND YEAR

Summer Session

RT 207 Clin Rad Tech III	8

Fall Semester

RT 274 Imaging I	2
RT 221 Rad Process Tech	2
RT 020 Radiograph Film Eval	CR/NC
RT 281 Radiograph Proced III	3
RT 010 Research Prob	CR/NC
RT 260 Clin Rad Tech IV	6

Spring Semester

RT 275 Imaging II	2
RT 291 Survey of Med and Surg Disease	3
RT 020 Radiograph Film Eval	CR/NC
RT 300 Basic Rad Biol	1
RT 261 Clin Rad Tech V	6

FEES

Tuition for the radiologic sciences programs is listed in the catalog under "Student Expenses." In addition to tuition, required books and uniforms will cost approximately $250.00 for the two-year period.

ASSOCIATE OF SCIENCE IN NUCLEAR MEDICINE TECHNOLOGY

A one-year program of study in nuclear medicine technology begins in June of each year and is limited to six students per year. Clinical and laboratory training provide the student with the knowledge necessary to perform the complex diagnostic procedures involving the administration and tracing of radioactive materials within the human body. Graduates of the program are expected to take the national registry examination for nuclear medicine technologists.

ADMISSION REQUIREMENTS

1. At least 18 years of age (ERDA regulation).
2. Meet UNM entrance requirements.
3. MT, RN, RT, or at least ninety hours of acceptable college work (AMA accreditation requirement).
4. Personal interview with the program faculty.
5. Application on file with the Director, January 31 prior to the June entrance.

CURRICULUM

Summer Session

RT 103 Prof Orient and Ethics	1
NM 201 Inter Rad Physcs	2
RT 205 Rad Protection	1
NM 309L Basic Nuc Lab Proced	2
NM 313 Clin Nuc Med I	2
NM 315L Clin Nuc Tech I	3

Fall Semester

NM 314L Clin Nuc Med II	3
NM 301 Adv Rad Physcs	2
NM 311L Inter Nuc Lab Proced	2
RT 010 Research Prob	CR/NC
NM 341 Nuc Instru I	3
Pharm 412 Radiopharm	4
Math 121/180 Alg/Calc	3
NM 316L Clin Nuc Tech II	6

Spring Semester

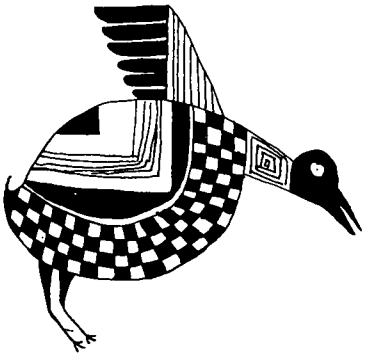
NM 342L Nuc Instru II	4
NM 321 Nuc Radiobiol	2
NM 322 Radionuclide Ther	1
Pharm 416 In Vitro Studies	2
NM 352L Radioimmunoassay Lab	3
Math 122/181 Alg/Calc	3
NM 317L Clin Nuc Tech III	6
NM 391 Special Prob (undergrad)	1-3
RT 291 Surv of Med and Surg Disease	3

FEES

Tuition for the radiologic sciences programs is listed in the catalog under "Student Expenses." In addition to tuition, required books and uniforms will cost approximately $250.00 for the one-year period.

INFORMATION REQUESTS

Communications regarding information and application should be addressed to the Director of Radiologic Sciences, The University of New Mexico, Albuquerque, New Mexico 87131.



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.

ACCREDITATION

The basic program in nursing is approved by the New Mexico Board of Nursing and is accredited by the National League for Nursing.

LICENSURE OF GRADUATES

Graduates of the College of Nursing are eligible to take the State Board Examinations by which they may be 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 and should be submitted by February 1 for consideration for admission to the College of Nursing for the following fall semester.

Generally, the number of applicants exceeds the number of students that can be admitted to the College of Nursing. Students should submit applications early to allow for adequate advisement and processing of applications. Applications received later than February 1 will not be processed.

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 February 1.
2. Completed or enrolled in all freshman prerequisites.

Engl 101	3
Soc or Anthro	3
Psych 102	3
Biol 123	4
Chem 141L	4
Chem 281	4
Sp Comm 221	3
Math 102, Psych 201, or Soc 280 (Statistics)	3
Electives	5

3. Maintained grade-point averages as follows:
   a. Students transferring from University College: a grade-point average of 2.25 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 2.25 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 2.25 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 first 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 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 281; Math 102; Nurs 222, 223, 239, 240, and 324. With respect to Pharmacology 276, RN students may elect to take the course, challenge the course, or be exempted from the requirement by successfully passing an exemption exam.

RN students are allowed to accelerate through the self-paced upper division major according to individual capacity and need. 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 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, cutural, 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 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 recom-

mended 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 PROGRAMS

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 honors study in addition to the usual requirements for the degree, (3) at least 60 hours earned at the University, and (4) 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 University Student Aids Office. Students in need of assistance are urged to investigate these sources.

EDUCATIONAL FACILITIES

Zimmerman Library, the general University library, and the Health Sciences Learning Resources Center are 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 Bernalillo County Medical Center, 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 outlying 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 the 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 Service. 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 responsibility 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 regulation 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 progressing toward the Bachelor of Science in Nursing. Students failing to meet this requirement are subject to administrative disenrollment from the College of Nursing.

Students must have a cumulative scholarship index of 2.25 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.

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 128 semester hours of course work of the prescribed curriculum.
2. Completion of at least 60 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 2.25 minimum with at least a C in all nursing courses.
5. Unanimous recommendation for the degree by the faculty of the College of Nursing.
6. Completion of the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.

CURRICULUM

FIRST YEAR			
Engl 101	3	Chem 281	4
Soc or Anthro	3	Sp Comm 221	3
Psych 102	3	Math 102, Psych 201, or	
Biol 123	4	Soc 280 (Statistics)	3
Chem 141L	4	Electives	

SECOND YEAR			
Biol 237 and Biol 247L	4	Pharmacology 276	3
Biol 239L	4	Nurs 223	2
H Ec 125	3	Nurs 240L	3
Nurs 222	2	Nurs 324L	2
Nurs 239L	2	Electives	
Biol 238 and Biol 248L	4		

THIRD YEAR		FOURTH YEAR	
Level I	12	* Levels III and IV	8
Level II	11	Electives	
Electives			

The College of Nursing will be renumbering the required nursing courses and revising the credit allocation within the levels. Please contact the Student Advisement Office for the most recent information.

Students who participate in the General Honors Program may apply to 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 Subcommittee.

See UNM Schedule of Classes for further information prior to registration.

It is the student's responsibility to meet all departmental requirements.

*Students should have a total of 35 hours of Levels III and IV.

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 School of Business and Administrative Sciences 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 with respect to drug information, poison control, pharmacy practice, and clinical pharmacy service. It is engaged in service responsibility to the Bernalillo County Medical Center in the area of drug distribution and clinical pharmacy. The College of Pharmacy also operates a centralized radiopharmacy which supplies service to various hospitals and institutions throughout the State of New Mexico. In addition, the College provides pharmaceutical services to UNM students via a professional pharmacy located in the Student Health Center.

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 80 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:

AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION SCHOLARSHIPS

Two scholarships of $300 each are awarded to third-, fourth-, or fifth-year students in the College of Pharmacy who rank in the upper quarter of their class scholastically, who maintain at least a B average, and who can demonstrate need. The scholarships are made possible by an annual grant from the American Foundation of Pharmaceutical Education.

JOHN W. DARGAVEL FOUNDATION SCHOLARSHIP

One scholarship of $200 is awarded to a third-, fourth-, or fifth-year student in the College of Pharmacy based on need. The scholarship is made possible by an annual grant from the John W. Dargavel Foundation, administered by the National Association of Retail Druggists.

DAVIS BROTHERS SCHOLARSHIP

One scholarship covering annual resident tuition is awarded to a third-, fourth-, or fifth-year student in the College of Pharmacy on the basis of scholarship, ability, and need. The scholarship is made possible by an annual cash award from the Albuquerque Division of Davis Brothers, Inc.

THE DOROTHY AND MIESCHEL DOWE MEMORIAL FUND

Financial assistance is available to students enrolled in the College of Pharmacy from a memorial fund established in memory of Dorothy and Mieschel Dowe, who lost their lives in a tragic accident in February 1974. Dorothy Dowe was a pharmacy student at UNM.

THE FURR'S INC. SCHOLARSHIP

One scholarship covering one semester's resident tuition is awarded annually to a student in the College of Pharmacy on the basis of scholarship, ability, and need. The scholarship is made possible by an annual cash award from Furr's, Incorporated.

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 $300 is awarded to a third-, fourth-, or fifth-year students 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.

HEALTH PROFESSIONS SCHOLARSHIPS

A number of scholarships of varying amounts are awarded annually to qualifying students in the College of Pharmacy. Scholarships are awarded competitively on the basis of exceptional financial need. Other eligibility requirements include U.S. citizenship and full-time enrollment (12 hours or more) in good standing (2.0 scholastic index or better). The scholarships are made possible by an annual grant from the Bureau of Health Manpower Education of the Department of Health, Education, and Welfare. It should be emphasized that these scholarships are dependent on annual or periodic federal legislation for funding. Therefore, it is frequently impossible to predict the annual amount of financial support in advance. Interested students should apply to the Director of Student Aids, Mesa Vista Hall.

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 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 pharmacy student 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 pharmacy intern under the New Mexico Pharmacy Act are as follows: "an applicant shall: be not less than 18 year 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.

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.

MINORITY RECRUITMENT PROGRAM

The College of Pharmacy has initiated a program to attract students from minority-group and low-income backgrounds. The program has been funded by a HEW Special Project Grant and involves a wide range of recruitment and retention activities including a Minority Educational Enrichment Program designed to assist students with academic problems.

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) 492-5152.

COMBINED PROGRAM

The College of Pharmacy cooperates with the School of Business and Administrative Sciences to offer a combined B.S. in Pharmacy/M.B.A. program. Under the combined program a student may earn the two degrees within six years, including two summer sessions. To complete the requirements for both degrees, it is recommended that the student begin planning for the combined program as early as possible in his college career. Details are available from the College of Pharmacy and the School of Business and Administrative Sciences.

ADMISSION

If the number of applications from well-qualified students exceeds the number that can be accommodated, successful completion of the minimum requirements as stated below is no guarantee of admission. All applicants for admission to the College of Pharmacy are screened by the Admissions Committee of the College of Pharmacy and selection of successful applicants is made on a competitive basis.

Preference is given to New Mexico residents or regional states which do not have a school or college of pharmacy and which participate in the Western Interstate Commission for Higher Education Student Exchange program.

The College of Pharmacy admits students for the fall semester only. Successful applicants are selected by the Admissions Committee during the month of June.

Requests for waivers of the minimum requirements as stated below should be made to the Chairperson of the Admissions Committee.

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

ADMISSION FROM UNIVERSITY COLLEGE

The minimum requirements for transfer from the University College to the College of Pharmacy for the B.S. in Pharmacy are:

1. Twenty-six hours of earned credit.
2. a. A scholarship index of at least 2.2 on all hours attempted
   or
   b. A scholarship index of at least 2.2 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 2.2 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 30.
3. Completion of the following course requirements (beginning the 1978 fall semester):
   Engl 101 and 102
   Chem 121L and 122L
   Math 180 and 181
   Biol 123 (or 121 and 122)

The transfer petition must be signed and filed in the University College not later than the end of the twelfth week of the spring semester in order to be considered for admission to the College of Pharmacy in the following fall semester. Students are urged to talk to the Chairperson of the Admissions Committee of the College of Pharmacy before filing the transfer petition.

TRANSFER FROM OTHER COLLEGES IN THE UNIVERSITY

The minimum admission requirements for transfer from other colleges in The University of New Mexico to the College of Pharmacy are:

1. A scholarship index of at least 2.2 on all work attempted while the student was enrolled in the other college(s).
2. Completion of the following course requirements (beginning the 1978 fall semester):
   Engl 101 and 102
   Chem 121L and 122L
   Math 180 and 181
   Biol 123 (or 121 and 122)

Students are required to notify the Chairperson of the Admissions Committee of the College of Pharmacy of their intent to transfer not later than the end of the twelfth week of the spring semester in order to be considered for admission to the College of Pharmacy in the following fall semester.

TRANSFER FROM OTHER COLLEGES AND INSTITUTIONS

The minimum admission requirements for transfer to the College of Pharmacy from other colleges and institutions are:

1. Twenty-six hours of acceptable credit.
2. A scholarship index of at least 2.2 on all hours attempted in the other college(s) or institution(s).
3. Completion of the following course requirements (beginning the 1978 fall semester):
   Composition and rhetoric, 6 hours
   (equivalent to Engl 101 and 102)
   General chemistry, 8 hours
   (equivalent to Chem 121L and 122L)
   Mathematics, 4-6 hours
   (calculus—equivalent to Math 180 and 181)
   General biology, 8 hours
   (equivalent to Biol 123)

Applications and credentials for admission to The University of New Mexico must be received in the University of New Mexico Admissions Office NOT LATER THAN MAY 1 in order to be considered for admission to the College of Pharmacy in the following fall semester.

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. A student will not be permitted to enroll in the curriculum (option and/or courses) of the fifth year if he/she has more than one grade of D in professional courses taken during the first four years.
3. Before entering into the fifth year a student must complete the curriculum of the first four years.
4. No course selected as part of the required College of Pharmacy curriculum or as a professional course or professional elective may be taken under credit (CR) grade option.
5. Beginning with the 1978 graduating class, professional courses taken before the start of the fifth year cannot be applied toward the 18 hours of required professional courses in the general option of 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.

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*DEFINITIONS

1. Nonprofessional electives: courses offered by other colleges and departments.
2. Professional electives: courses offered by the College of Pharmacy and courses offered by other colleges and departments as approved by the fifth-year option adviser.
3. Professional courses: courses offered by the College of Pharmacy only (i.e., excluding Dental Programs).

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. For any student falling under this regulation, it is mandatory that the Academic Scholarship Committee review the conditions prior to further action being taken.

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 Chairperson of the Admissions Committee of the College of Pharmacy is the academic adviser for all pre-pharmacy students.

All enrolled pharmacy students are assigned to individual faculty members of the College of Pharmacy and are expected to consult their advisers for academic advisement of a general nature or for information and advice in curriculum matters.

MINIMUM RESIDENCE REQUIREMENT

Students entering the College of Pharmacy with advanced standing from nonpharmacy colleges are required to complete not less than six semesters of full-time 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.

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. All required courses
   c. 18 hours of nonprofessional electives
   d. All courses in the selected fifth-year option as approved by the option adviser
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. Complete the Undergraduate Program Test Battery, including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB should be directed to the College office.
5. Satisfy the minimum residence requirement.

CURRICULUM LEADING TO THE BACHELOR OF SCIENCE IN PHARMACY

(Description of the courses offered will be found in the Courses of Instruction section of this catalog.)

FIRST YEAR
(Preprofessional Year)
First Semester

Engl 101 Wrtg w/Rdgs in Expos	3
Chem 121L Gen	4
Math 180 Calc for Soc and Biol Sci	3
* Math 123 Trigonometry	
Nonprofessional elective	3
	13

Second Semester

Engl 102 or Engl 220	3
Chem 122 Gen	4
Math 181 Calc for Soc and Biol Sci	3
† Biol 123L Gen	4
Nonprofessional elective	3
	17

SECOND YEAR
(First Professional Year)
First Semester

Pharm 291 Pharm Orient	2
Chem 301 Organic	3
Chem 303L Organic Chem Lab	1
Biol 237 Hum Anat and Physiol for Hlth Sci I	3
Biol 247L Hum Anat and Physiol for Hlth Sci I Lab	1
Pharm 239L Pharm Path I	2
Physcs 151 Gen	3
Physcs 153L Gen Physcs Lab	1
	16

Second Semester

Pharm 244 Hist of Pharm	2
Chem 302 Organic	3
Chem 304L Organic Chem Lab	1
Biol 238 Hum Anat and Physiol for Hlth Sci II	3
Biol 248L Hum Anat and Physiol for Hlth Sci II Lab	1
Pharm 240L Pharm Path II	2
Physcs 152 Gen	3
Nonprofessional elective	3
	18

THIRD YEAR
First Semester

Pharm 341L Operative Pharm I	4
Pharm 343 Pharm Calc	2
Pharm 373 Phmcol I	3
Chem 253L Quant Analysis	4
Biol 239 Microbiol for Hlth Sci	4
	17

Second Semester

Pharm 342L Operative Pharm II	4
Pharm 292 Soc-Econ of Hlth Care	3
Pharm 296 OTC Drugs and Prod	2
Chem 324 Biochem	3
Nonprofessional electives	6
	18

FOURTH YEAR
(Third Professional Year)
First Semester

Pharm 443L Physical Pharm	4
Pharm 431 Clin Therapeutics I	4
Pharm 461 Org Pharm Chem I	3
Pharm 475 Phmcol II	4
	15

Second Semester

Pharm 444 Biopharmaceutics	3
Pharm 432 Clin Therapeutics II	4
Pharm 462 Org Pharm Chem II	3
Pharm 476 Phmcol III	4
Nonprofessional elective	3
	17

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, Phar-

* Required of students who have not successfully completed trigonometry in high school or who have not tested out of the course. Elective credit (1 unit) will be granted to those students who successfully complete Math 123.

† Biol 121L-122L may be accepted in lieu of Biol 123L and for transfer students.

macology, 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 preregistration 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 and the preparation for post-baccalaureate studies option may be limited.

Students will be permitted to change their option only after consultation with and approval by their previous and future option advisers prior to or within the first two weeks of the fall semester of their senior year.

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 Pharm Rot I	0-3
Pharm 437 Clin Pharm V Lect	3
Pharm 493L Pharm Prac I	2
† Professional courses	6-9
	14-17

Second Semester

Pharm 422 Pharm Law	3
* Pharm 434L Clin Pharm Rot II	0-3
Pharm 494L Pharm Prac II	2
† Professional courses	6-9
	14-17

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
	14

Second Semester

Pharm 422 Pharm Law	3
Pharm 424 Pharm Retail Mgmt	3
Pharm 434L Clin Pharm Rot II	3
Pharm 482 Toxicology I	3
Professional electives	0-4
	12-16

3. Hospital Pharmacy Option

First Semester

Pharm 433L Clin Pharm Rot I	2
Pharm 437 Clin Pharm V Lect	3
Pharm 451 Instit Pharm Prac	3
‡ Pharm 423 Prin Pharm Adm/Org Behav	3
Professional electives	3-7
	14-18

Second Semester

Pharm 422 Pharm Law	3
Pharm 434L Clin Pharm Rot II	2
Pharm 452 Instit Pharm Mgmt	3
Pharm 482 Toxicology I	3
Professional electives	3-7
	14-18

4. Radiopharmacy Option

Summer Session

Rad T 201 Inter Radiophysics	2
Rad T 205 Rad Protection	1
NMDT 313 Clin Nuc Med I	2
	5

First Semester

NMDT 301 Adv Rad Physcs	2
NMDT 314L Clin Nuc Med II	3
NMDT 341 Nuc Instru	3
Pharm 412L Radiopharmacy I	4
Pharm 417 Radpharm Rot I	2
Pharm 493 Pharm Prac I	2
	16

Second Semester

NMDT 321 Nuc Rad Biol	2
Pharm 416 In-Vitro Studies	2
Pharm 418 Radpharm Rot II	3
Pharm 422 Pharm Law	3
Pharm 498 Problems	3
Professional electives	0-3
	13-16

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
§ B&AS 501 Quant Analysis II	3
B&AS 502 Acctg and Mgmt Inf Sys I	3
B&AS 504 Organiz Econ I	3
B&AS 506 Organiz Behav I	3
	15

Second Semester

Phar 422 Pharm Law	3
Pharm 426 Pharmaceutical Mkt	3
Pharm 434L Clin Pharm Rot II	3
B&AS 503 Acctg and Mgmt Inf Sys II	3
B&AS 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
Pharm 456 Res Dsgn and Stat Meth for Pharm Prac	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
Professional electives	0-6
	14-20

Second Semester

Pharm 422 Pharm Law	3
Pharm 434L Clin Pharm Rot II	9-15
Professional electives	0-3
	12-21

d. Pharmaceutical Chemistry

First Semester

Pharm 433L Clin Pharm Rot I	2
Pharm 463 Adv Pharmaceut Chem I	3
Pharm 465L Org Phmct Chem I Lab	3
Pharm 467 Chem of Nat Prod I	3
Professional electives	0-6
	11-17

* A combined total of at least three (3) hours of Pharm 433L and/or 434L must be scheduled by each student.

† Professional courses necessary to provide 29 hours of course work in the senior year.

‡ Offered by School of Business and Administrative Sciences as B&AS 361.

§ B&AS 501-510 are acceptable for credit by both the College of Pharmacy and the School of Business and Administrative Sciences for combined program.

Second Semester

Pharm 422 Pharm Law	3
Pharm 434L Clin Pharm Rot II	2
Pharm 464 Adv Pharmaceut Chem II	3
Pharm 466L Org Phmct Chem II Lab	3
Pharm 468 Chem of Nat Prod II	3
Professional electives	0-3
	14-17

e. Pharmacology

First Semester

Pharm 437 Clin Pharm V Lect	3
Pharm 477 Neuropharmacology	2
Pharm 479L Pharmacology Lab	3
Pharm 483L Biochem Phmcol Lab	2
Pharm 485 Biochem Phmcol Lect	2
Professional electives	3
	15

Second Semester

Pharm 422 Pharm Law	3
Pharm 434L Clin Pharm Rot II	3
Pharm 456 Res Dsgn and Stat Meth for Pharm Prac	3
Pharm 482 Toxicology I	3
Pharm 484L Toxicology II	4
	16

f. Pharmacognosy

First Semester

Pharm 433L Clin Pharm Rot I	3
Pharm 467 Chem of Nat Prod I	3
Pharm 493L Pharm Prac 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

g. Pharmaceutics

First Semester

Pharm 433L Clin Pharm Rot I	3
Pharm 449L Pharmacokinetics	3
Pharm 498 Problems	1-5
Professional electives	3-6
	13-17

Second Semester

Pharm 422 Pharm Law	3
Pharm 446 Adv Phys Pharm	3
Pharm 450 Clin Pharmaceutics	3
Pharm 498 Problems	1-5
Professional electives	0-3
	13-17

h. Hospital Pharmacy

First Semester

Pharm 423 Prin Pharm Adm/Org Behav	3
Pharm 433L Clin Pharm Rot I	2
Pharm 437 Clin Pharm V Lect	3
Pharm 451 Instit Pharm Prac	3
Pharm 453 Hosp/Hosp Pharm Adm	2
CIS 155 Prob Solv w/Computer	3
	16

Second Semester

Pharm 422 Pharm Law	3
Pharm 434L Clin Pharm Rot II	2
Pharm 452 Instit Pharm Mgmt	3
Pharm 456 Res Dsgn and Stat Meth for Pharm Prac	3
Pharm 459L Sterile Preps	3-4
Pharm 482 Toxicology I	3
	17-18

DENTAL PROGRAMS

The Dental Programs have three offerings:

1. A dental assisting program, leading to a Certificate of Proficiency in Dental Assisting, which is two semesters in length
2. A dental hygiene program, leading to the Associate of Science in Dental Hygiene, which includes one preprofessional year and two professional years
3. A program leading to the Bachelor of Science in Dental Hygiene. This requires 120 days of working experience as a licensed dental hygienist and two or more semesters of academic work beyond the associate of science degree requirements.

DENTAL ASSISTING

As auxiliary personnel to the dental profession, dental assistants perform supportive duties to the dentist in all 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.

The Dental Assisting Program is a two-semester curriculum which begins each year in the fall semester only. 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 and for instruments and dental supplies.

APPLICATION 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. Take the Dental Assisting Aptitude Test and have scores sent to The University of New Mexico Dental Programs. Applications for the test are available from the Dental Programs Office.
3. 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.

All of the admission requirements must be completed by March 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 March 1 deadline.**

CURRICULUM LEADING TO THE CERTIFICATE IN DENTAL ASSISTING

First Semester

Engl 100 or 101 Wrtg w/Rdgs in Expos	3
Psych 101, Soc 101, or Sp 201	3
DH 200 Orientation	2
DH 211L Dental Anat	2
DH 212L Oral Radiography	2
DA 121 Intro Dental Sci	3
DA 131L Prin of Dental Assist	2
	17

Second Semester

Biol 136	3
Biol 139L	1
H Ec 125 Food for Man	3
H Ed 164 First Aid	2
DA 122L Adv Dent Sci	4
DA 132L Prac in Dental Assist	5
	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 two 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 required, maintaining a scholastic average of at least 2.0.
2. Earn grades of C or better in all courses in the **last semester** of the required curriculum.

3. Unanimous recommendation by the full-time faculty of the Dental Programs.

Students who complete the Dental Assisting Program may elect to take the certification examination of the American Dental Assistants' Association. This examination is administered at The University of New Mexico on demand each spring and fall.

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, and clinic and laboratory uniforms.

REQUIREMENTS FOR ADMISSION

1. Admissibility to UNM.
2. Completion of all courses listed under the preprofesional 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. A personal interview.

PREPROFESSIONAL CURRICULUM

Any two courses in Engl	6	Psych 101 or 102	3
Biol 136, 139L	4	Soc 101	3
Biol 239L	4	Sp Comm 221	3
Chem 141L, 281	4		

Preference is given to residents of New Mexico. Potential students who are past the age of most college 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. Dental Programs application form
   b. Copies of all transcripts
   c. Current enrollment information

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 Interview Committee for a brief 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 to complete medical and dental history forms.

PROFESSIONAL CURRICULUM

FIRST YEAR

DH 200 Orientation	2	H Ec 125 Intro Nutr	3
DH 201, 202L Preclin DH	2, 2	Pharm 276 Prin of Pharm	3
DH 203, 204L Clin DH	2, 3	Electives	6
DH 210 Oral Anat	3		30
DH 211L Oral Rad	2		

SECOND YEAR

DH 300, 302, 303L Integ DH	2, 4, 1, 5	DH 322 Insights to Pub Hlth in NM	2
DH 310 Hist	2	DH 330 Oral/Dental Med	2
DH 312 Path	2	DH 342 Prac Mgmt	2
DH 320L Dental Mat	2		24

All courses in the professional curriculum must be taken for a letter grade except DH 202L which will be graded CR/NC. Credits in physical education activity courses will be limited to two in fulfillment of elective credits.

Students graduate under the catalog requirements of the year in which they enroll, provided they complete graduation 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 a scholastic average of at least 2.0.
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

This offering is designed to prepare teachers of clinical dental hygiene. Therefore at least 120 days of clinical work experience as a licensed hygienist are required. 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 requirements:

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. Documentation of at least 120 days of work experience in clinical dental hygiene. Forms are available from the Dental Programs.
6. Records of medical and dental examinations within the past three months.
7. Letters of recommendation from all employers from the time of receiving the dental hygiene certificate or degree to the present.
8. 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.
5. Completion of the Undergraduate Program Test Battery (UAP), including the aptitude test and an advanced or field test, during the first semester of the senior year. Registration materials will be available from the College office early in the semester. It is the student's responsibility to make arrangements for the test. The student will receive a copy of the test results together with interpretation information. Questions regarding the UPTB (UAP) should be directed to the College office.

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.

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 concentrations for persons interested in energy management, Indian administration, and public science policy and administration. A joint degree program with the School of Law enables second-year law students to earn both a law degree and the M.P.A.

For description of courses offered in public administration, see the Courses of Instruction section of this catalog. For curriculum see the Graduate School 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 noncredit 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.

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.

INDEPENDENT STUDY COURSES. A number of courses are offered which are carried on entirely by mail and are planned and conducted by qualified University personnel. Credit received 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 Regulations").

COMMUNITY COLLEGE

The Division offers a program of late afternoon, evening, and Saturday noncredit courses, making it possible for adults to supplement their education along general cultural lines or in the fields of their special interest.

The bulletin listing noncredit courses offered each semester may be obtained from the Dean, Division of Continuing Education and Community Services, The University of New Mexico, Albuquerque, New Mexico 87131.

CONFERENCES, INSTITUTES, AND SHORT COURSES

All conferences and special courses connected with The University of New Mexico are coordinated through the Division of Continuing Education and Community Services.

Business, professional, or lay groups interested in a series of meetings to discuss topics of special interest should contact the Dean, Division of Continuing Education and Community Services, who will make the necessary arrangements for the meetings.

ADULT EDUCATION PROGRAMS

To any community, club, or organization which wishes help in setting up adult education activities the University will give all the assistance possible. Educational activities such as adult basic education, club study groups, forums, lecture series, etc., will receive special attention.

COLLEGE PREPARATORY PROGRAM

The program is designed to assist students who (a) are denied admission to UNM because of high school subject matter or other academic deficiencies, (b) have been out of school for a number of years and wish a refresher course in either English, mathematics, natural science, and social science, (c) students who feel their academic skills are insufficient for a successful experience at UNM. See course listings under mathematics and English.

UNIVERSITY FACILITIES

Any scheduling of space, other than for the intended purpose or normal use, in Johnson Gym, the Arena, the Stadium, 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 two branch colleges and two residence centers.

The two branch colleges of The University of New Mexico offer courses within the first two years of a baccalaureate program and are under the supervision of the Division of Continuing Education. Academic requirements and regulations are the same at the branches as on the main campus.

All 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 Dean of Admissions and Records, The University of New Mexico, Albuquerque, New Mexico 87131. The University requires students to file applications for admission, to pay a $15 application fee, and to have their credentials sent directly to the Dean of Admissions and Records from the high school or college previously attended. Transcripts in the possession of students are not acceptable for entrance purposes.

THE GALLUP BRANCH

The University of New Mexico Gallup Branch began its first full-term instruction in September 1968. The Branch offers courses within the first two years of a baccalaureate program. In addition, the Branch offers technical and paraprofessional post-high school courses which are responsive to needs of the Gallup area.

At the present time the Branch occupies a building donated to the branch college by the Gallup Lions Club. The Branch also uses facilities in the Gallup High School, including classrooms and laboratories. Most classes are held in the late afternoon and evening, although some are scheduled in the daytime. A new facility including classrooms, laboratories, library, and office space was completed in 1974.

THE NORTHERN BRANCH

The University of New Mexicb Northern Branch was established in February 1973. Instruction at the Branch began with the 1973 summer session and headquarters are located near Espanola.

After July 1, 1977, the Northern Branch will be merged into the New Mexico Technical-Vocational Institute at El Rito and will no longer be connected with The University of New Mexico.

SANTA FE GRADUATE CENTER

The University offers graduate courses in Santa Fe through the Santa Fe Graduate Center. Refer to the Graduate School Bulletin for details.

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.

ANDEAN STUDY AND RESEARCH CENTER,
QUITO, ECUADOR

This center was established to provide juniors, seniors, and graduate students in good standing at The University of New Mexico an opportunity for overseas field work, study, and research. The Andean Center constitutes a physical transfer of a portion of the Latin American Center's program to an overseas site and is, therefore, a fully accredited program offering courses in Latin American languages (including Portuguese), literatures, and social sciences applicable toward degrees. For information concerning courses offered during specific semesters, students should contact the Director, Latin American Center (see p. 38).

The Andean Center occupies a handsome facility independent of either of the Quito universities but close enough to both to facilitate class attendance at either.

COMPUTING CENTER

The Computing Center supports both course work and research, with its facilities available to students and faculty in all departments.

The Center has an IBM System 360, Model 67, and is also equipped with a sorter and card punches. Members of the staff are on hand to offer programming assistance to all users. An extensive set of reference documents, both vendor- and Center-produced, is maintained to aid in this assistance.

Along with the standard software provided with the computer by the vendor, additional software is maintained, including WATFIV, ALGOLW, SPSS, CSMP, GPSS, MPS, the U.C.L.A. BMD statistical series, and other similar packages.

The computing system supports batch (cardreader and printer) job entry, both remote and local, as well as keyboard entry through a variety of low-speed terminals, some located at the Computing Center and some within various departments around the campus. The interactive timesharing system supports the BASIC, FORTRAN, and PL/1 languages as well as a remote batch interface.

The staff at the Center also conducts a series of lectures in programming orientation for members of the University. These series are given at irregular intervals but are announced well in advance.

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 successfully 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), students must qualify on the Air Force Officer Qualifying Test (AFOQT), pass a medical evaluation, and be selected by a review board. All AFROTC 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 requirement 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 qualify on the Air Force Officer Qualifying Test (AFOQT), pass a medical evaluation, and be selected by a review board. 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 $524 for the six-week summer training period and $371 for the four-week summer training period (in addition to eight 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 before the midpoint of the second semester of their sophomore year. Specifics may be obtained by contacting the Air Force ROTC staff members at 1901 Las Lomas NE. An $8 activity fee will be collected 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 100 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 the cadets with practical command and staff leadership experiences by performing their various tasks within the framework of the organized cadet corps.

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	
AS ASP 201 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	
AS ASP 400 Natl Sec Forces in Contemp Amer Soc	3
AF ASP 402 Flight Instr Program	3
Second Semester	
AS 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 four-year college program, or the two-year college program. All three programs lead to service as a commissioned officer in the Navy or Marine Corps.

Applications for the NROTC scholarship program must be made to the Navy by November 15 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 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 receive 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 Director 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.

FIRST YEAR

First Semester

Nav Sc 100 Principles and Concepts of Naval Science	2

Second Semester

Nav Sc 105 Naval Ships Sys I	3

SECOND YEAR

First Semester

Nav Sc 106 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 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.

THE UNIVERSITY OF NEW MEXICO FACULTY LIST 1975-76

FOOTNOTE KEY

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[32]Appointment effective 3/5/76.
[33]On leave 10/1-12/31/75.
[34]Resigned 12/19/75.
[35]Deceased 10/31/74.

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VERNON GUY SORRELL, B.A., State University of Iowa; M.A., University of Illinois; Ph.D., University of California. Dean Emeritus of the College of Business Administration; Professor Emeritus of Business Administration.

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TONI TARLETON, Director Emeritus, Harwood Foundation.

JOHN TATSCHL, Diploma, Austrian State Teachers College; Diploma, Vienna Academy of Applied Arts; Diploma, Master School of Sculpture, Vienna Academy of Fine Arts. Professor Emeritus of Art.

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HOYT TROWBRIDGE, B.A., M.A., Ph.D., University of Wisconsin. Professor Emeritus of English.

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HENRY P. WEIHOFEN, Ph.B., J.D., J.S.D., University of Chicago. Professor Emeritus of Law.

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DUDLEY WYNN, B.A., University of Texas; M.A., Ph.D., New York University. Director Emeritus of the General Honors Program and the Undergraduate Seminar Program. Professor Emeritus of English.

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[35]Deceased 10/31/74.

ACTIVE FACULTY, 1975-76

[28]WILLIAM EUGENE DAVIS, B.S., University of Colorado; M.A., University of Northern Colorado; Ed.D., University of Colorado. President of the University.

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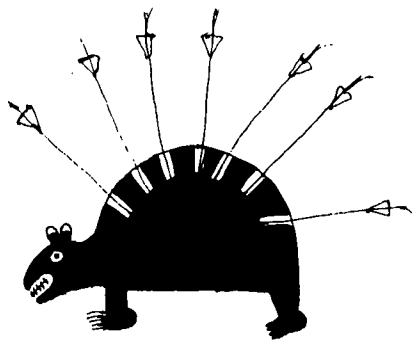
[6]ROBERT STEPHEN KIRBY, B.S., M.S., University of Arizona. Instructor in Instrumentation Electronics.
HELEN L. KIRKPATRICK, B.U.S., M.A., A.B.D., University of New Mexico. Instructor in Educational Foundations.
[6]JUDITH LATHROP, B.A., Vassar College; M.A., University of Southern California. Instructor in English.
BARBARA JANE LENSSEN, B.S., University of Cincinnati; M.A., Ph.D., Stanford University. Instructor in Psychology.
[6]CHARLES LOPEZ, B.A., New Mexico Highlands University. Instructor in Sociology.
[6]THOMAS A. LOPEZ, A.S., North American Technical Institute, Albuquerque. Instructor in Instrumentation Electronics.
LYNN LOWN, B.F.A., University of Iowa; M.F.A., University of Oregon. Instructor in Art.
[6]RUTH MAES, B.A., Adams State College, M.Ed., Utah State University. Instructor in Business Education.
EDWARD MAESTAS, B.S., New Mexico Highlands University; M.N.S., Eastern New Mexico University. Instructor in Chemistry.
JOHN JOSEPH MARSH, B.A., Belleville College; Ph.D., University of Northern Colorado. Instructor in Business Education.
[6]PAUL MARTINEZ, B.A., M.Ed., Eastern New Mexico University. Instructor in Spanish.
[6]VICENTE MONTANER MARTINEZ, B.A., M.A., University of New Mexico. Instructor in Sociology.
[6]JACKIE McCARTY, B.A., Barry College, Miami, Florida; M.A., Southern Methodist University; Ph.D., North Texas State University. Instructor in Elementary Education.
JOAN CORNETT McCONNELL, Diploma, Cleveland Institute of Art. Instructor in Art.
[6]RONALD D. McCURLEY, B.S., University of New Mexico; M.S., Florida Institute of Technology. Instructor in Industrial Education.
JOAN McDONALD, B.F.A., Massachusetts College of Art; M.A, University of California, Berkeley. Instructor in Art History.
[6]KENNETH McDONALD, B.F.A., Massachusetts College of Art; M.F.A., San Francisco Art Institute. Instructor in Art.
HARRY GEIGER McGAVRAN, JR., B.A., University of Michigan; M.A., University of New Mexico. Instructor in Chemical Engineering.
[6]JANET McGAVRAN, B.A., University of Michigan; M.A., University of New Mexico. Instructor in English.
ROBERT McGEAGH, B.A,. St. Mary's Seminary, Illinois; M.A., University of California, Fullerton; Ph.D., University of New Mexico. Instructor in History.
[6]HAROLD McKAY, B.S., Rutgers University; M.S., Ph.D., University of New Mexico. Instructor in Biology.
DONALD MILLIGAN, B.S.E.E.C.S., University of New Mexico. Instructor in Electrical Engineering.
[7]ROBERTO MONDRAGON, Instructor in Political Science.
ROY MONTOYA, B.A., New Mexico Highlands University. Instructor in Music.
DONALD MORRIS, B.S., M.S, New Mexico State University. Instructor in Economics.
JOE GILBERT NARANJO, B.A., College of Santa Fe; M.A., New Mexico Highlands University. Instructor in Biology.
BRUCE NOEL, B.S.E.E., Drexel Institute of Technology; M.S.E.E., Case Institute of Technology; Ph.D., University of New Mexico. Instructor in Mathematics.
BERNABE ORTEGA, B.A., New Mexico Highlands University; M.A., Adams State College. Instructor in Spanish.
JUDITH PARDEE, B.A., Radcliffe College; M.A., Brown University. Instructor in Spanish and Philosophy.
MARTY PILTCH, A.B., Columbia University; M.S., Ph.D., Polytechnic Institute of Brooklyn. Instructor in Mathematics.
PATRICIA PINO, B.S., M.A., University of New Mexico. Instructor in Speech Communication.
LAVERNE LEWIS POLLAT, B.A., Nebraska State Teachers College. Instructor in Instrumentation Electronics.
STEPHEN GREGORY PORTMAN, B.A., Texas Christian University; M.A., Ph.D., University of New Mexico. Instructor in Philosophy.
REINHARDT A. QUELLE, B.A., University of New Mexico. Instructor in Business and Administrative Sciences.
DAVID RASKIN, R.N., Pilgrim State Hospital School; F.N.P., University of Arkansas. Instructor in Health Education.
JAMES LOWTHER REILEY, B.S., Lehigh University; M.A., Northern Arizona University. Instructor in Political Science.
JOSE MIGUEL ROMERO, B.A, M.A., New Mexico Highlands University. Instructor in History.
[6]KENNETH JAMES RUTTER, B.A., University of South Dakota; M.S., University of New Mexico. Instructor in Biology and Chemistry.
[7]ALESSANDRO SALIMBENI, B.A., M.A.T.E., University of New Mexico. Instructor in English.
[6]LELAND SCHACHTERLIE, B.S., Colorado State University; M.A., Western State College. Instructor in Mathematics.
MARIO E. SCHILLACI, B.S., Drexel University; M.A., Ph.D., Brandeis University. Instructor in Physics.
ANDREA MANTELL SEIDEL, B.A., University of Miami; M.A., McGill University. Instructor in English.
[6]WILLIAM SEIFERT, B.S., M.S., Michigan University. Instructor in Electrical Engineering.
LOIS CATHERINE SHARP, B.A., Briarcliff College; M.A, University of Iowa. Instructor in English.
ROBERT RAYMOND SHARP, JR., B.S., New Mexico Institute of Mining and Technology; M.S., Ph.D., University of Arizona. Instructor in Geology.
WILMER LAWRENCE SIBBITT, B.S., M.S., Ph.D., Purdue University. In-

structor in Mechanical Engineering.
ROBERT SKAGGS, B.S., New Mexico State University; M.S., Ph.D., University of New Mexico. Instructor in Engineering.
DIANE SORAN, B.S., M.A., Queens College of the City University of New York. Instructor in Chemistry.
[8]RANDALL HANNAFORD SPEIRS, B.A., Shelton College; Ph.D., University of Buffalo. Instructor in Elementary Education.
VICTOR STARKOVICH, B.S., Portland State University; Ph.D., University of Wyoming. Instructor in Mathematics.
DANIEL GENE STEELE, B.A., San Diego State University; M.A., Ph.D., Baylor University. Instructor in Psychology.
[8]DWIGHT L. STEPHENSON, B.S., California State Polytechnic College. Instructor in Instrumentation Electronics.
FORREST STRONG, B.F.A. in Ed., University of Nebraska; M.A., New Mexico Highlands University. Instructor in Art.
CORINNE P. SZE, B.A., Wellesley College; M.A., Ph.D., Yale University. Instructor in Latin and Greek.
CHARLES ROBERT TALLMAN, B.S.E.E., California Institute of Technology; M.S.E.E., University of New Mexico. Instructor in Instrumentation Electronics.
LUCY THOMAS, B.A., University of Kansas. Instructor in Business Administration.
TIMOTHY ROSS THOMAS, B.A., University of California, Berkeley; M.S., Ph.D., Tulane University. Instructor in Psychology.
PATRICK ANDREW THOMPSON, B.S., M.S., Ph.D., Yale University. Instructor in Physics.
ADELINE V. TORREZ, B.S., Marian College, Indianapolis; M.A., New Mexico Highlands University. Instructor in English.
BENJAMIN TRUJILLO, B.S., University of New Mexico; M.A., Boston College. Instructor in Mathematics.
DELFINA TRUJILLO, B.S., M.A., New Mexico Highlands University. Instructor in Business Education.
[8]FELIX E. TRUJILLO, B.A., M.A., New Mexico Highlands University. Instructor in Industrial Education.
[8]NOEL TRUJILLO, B.A., New Mexico Highlands University; M.A., Northern Illinois University. Instructor in Speech.
CHARLES DWIGHT TURPEN, B.A., University of Kansas; M.A, University of New Mexico. Instructor in Economics.
[7]LEVI VALDEZ, B.A., College of Santa Fe; M.A.T.S., University of New Mexico. Instructor in Spanish.
[8]WILLIAM JOSEPH VAN DYKE, B.S., University of South Carolina. Instructor in Instrumentation Electronics.
[7]FRANCIS HELEN VARELA, B.A., University of Dayton. Instructor in Health, Physical Education, and Recreation.
[7]BILLY EDUMENIO VIGIL, B.A,. M.A., Adams State College, Colorado. Instructor in Business Education.
[8]HILDA SYRIL VOLKIN, B.S., Massachusetts College of Art; A.M., Radcliffe College. Instructor in Art.
[6]JUDITH WAGNER, B.A., M.A., University of New Mexico. Instructor in Mathematics.
[8]HUGH NICHOLS WILSON, B.A., Wichita State University; M.A., University of Northern Colorado. Instructor in Elementary Education.
ROZELLE WRIGHT, B.A., Reed College; M.A., Ph.D., Boston University. Instructor in Computer and Information 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 departments.

Courses are numbered from 001 through 799. Courses from 001 to 099 may or may not carry credit but are not applicable toward a baccalaureate degree. The number 100 is reserved for courses designed to develop basic 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 freshmen; 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 the Graduate School only, the School of Law, or the School of Medicine. **See Graduate School Bulletin for description of courses numbered 500 and above.**

Symbols used in departmental faculty listings:
- [1]On sabbatical leave for year.
- [2]On sabbatical leave first semester.
- [3]On sabbatical leave second semester.
- [4]On leave for the year.
- [5]On leave first semester.
- [6]On leave second semester.

Symbols used in course descriptions:
- *—course allowed for graduate credit to students enrolled in the Graduate School. 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 chairman (or dean).
- ††—may be repeated for credit with permission of department chairman (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 course 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 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 chairman.

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

Edwin Conley, Jr., Lt.Col., USAF, M.B.A., Professor; Lawrence E. Ashby, Maj., USAF, M.S., Commandant of Cadets; David H. Barthel, Major, USAF, M.A., Administrative Officer.

CURRICULUM

010. Leadership Laboratory. [Corps Training] **(0)**
A laboratory of one hour per week is conducted over the student's full period of enrollment for the practice of leadership and management techniques. It provides students with practical command and staff leadership experiences by performing various managerial duties within the framework of the corps. No academic credit is awarded for this laboratory.

150-151. [100-101] **The Air Force Today.** [United States Military Forces in the Contemporary World] **(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. {100—Fall, 101—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 late 1960s and also the war in Southeast Asia. {200—Fall, 201—Spring}

300-301. [400-401] **Air Force Management Leadership.** [Concepts of Leadership and Management] **(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. {400—Fall, 401—Spring}

400-401. [300-301] **National Security Forces in Contemporary American Society.** [Introduction to Defense Policy] **(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. {300—Fall, 301—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 FAA private pilot written exam and a basic flying proficiency evaluation to successfully complete the program. Prerequisite: qualified senior students in the POC. {Fall}

AFRO-AMERICAN STUDIES

COORDINATOR: Harold Bailey, Ph.D., Lecturer in Educational Foundations; ADMINISTRATIVE ASSISTANT: Shiame Okunor, M.P.A., Ed Fdn; INSTRUCTORS: Charles Becknell, Ph.D.; Samuel Ngola, M.A., Lenton Malry, Ph.D.; Gustav Ntiforo, M.A.; Joshua Maingi, M.A.; Cortez Williams, Ph.D.; Robert Jones, J.D.; Fondo Sikod, M.A.; Regina Blackburn, M.A.

The Afro-American Studies Program is an academic-oriented program designed to provide courses for the University community. Besides offering courses, the Program provides student services such as academic counseling, registration assistance, career counseling and advisement, tutorial assistance, financial aid and grants information.

The diversified course schedule is complimented by the program sponsorship of the following University and community projects: Afro-American Resource Center, Senior Citizens Program, Youth Enrichment Program, Uhuru Sasa Center of Performing Arts, Lenton Malry Scholarship Fund, Student Emergency Loan Fund, Summer Youth Program, and The Black Experience Television Program.

CURRICULUM

Am St 211. The Black Experience. (3)

Am St 301. Interdepartmental Studies in the Culture of the United States. (3)
Blacks and the law, racism in athletics, institutional racism.

Am St 312. The Black Woman. (3)

Am St 313. The Black Community. (3)

Engl 280. Readings in Literature. (3)
African literature.

Hist 284. Afro-American History. (3)
(Also offered as Ed Fdn 284.)

Hist 357. History of Africa Since 1800. (3)

Hist 387. Blacks in Latin America. (3)

Pol Sci 309. Blacks in Politics. (3)

Pol Sci 352. African Politics. (3)
(Also offered as Ed Fdn 352.)

Soc 316. Black Family in America. (3)

Swahili 101-102. Introduction to Swahili. (3)

Art Ed 293. Topics. (1-3)
Art education and cultural change.

Ed Fdn 447. Topics. (1-3)
Education of Afro-Americans.

AMERICAN STUDIES

ASSOCIATE PROFESSOR S. B. Girgus, Ph.D. (Chairperson); PROFESSOR H. Hill, Ph.D.; ASSOCIATE PROFESSOR J. M. Jones, Ph.D (part-time); ASSISTANT PROFESSORS H. M. Bannan, Ph.D.; C. D. Biebel, Ph.D.

THE AMERICAN STUDIES COMMITTEE: A. L. Alvarado, Ph.D. (Anthropology); G. W. Arms, Ph.D. (English); G. Baker, Ph.D. (Women Studies); E. W. Baughman, Ph.D. (English); R. D. Campbell, Ph.D. (Geography); S. Cohen, Ph.D. (Economics); D. George, M.A. (Art); H. Hill, Ph.D. (English); H. V. Rhodes, Ph.D. (Political Science); D. M. Slate, Ph.D. (Business and Administrative Sciences); F. M. Szasz, Ph.D. (History); A. P. Taylor, Ph.D. (Art Education and Architecture); M. M. Weigle, Ph.D. (English and Anthropology).

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 School Bulletin.

MINOR STUDY

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.

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 problems 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 Lifestyles. (3) Staff
An examination of the world view and lifestyles of 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. (3)
Important themes and issues of our society (1607 to the present), as reflected in American literature. {Fall, Spring}

286. American Life and Thought II. (3)
Course is intended for students who have had 285. Purpose is to give students opportunity to pursue individual and group research projects which interested them in introductory course but for which one semester's time was insufficient to develop. Interests, methodology, and results will be presented to entire class.

301-302. Interdepartmental Studies in the Culture of the United States. (3, 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 chairman of the student's major department.** {Summer, Fall, Spring}

303. The Artist in the United States. (3) Biebel
An examination of the manner in which selected artists in the recent past have come to terms with their experience as Americans. {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 American Dream. (3) Bannan
An in-depth analysis of the American dream of "self-made" success, examining the myth as represented and denied in literature, autobiography, history, and studies of American cultural values. {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 the United States (3) Girgus
A comprehensive survey of the cultural and historic relationship between Jews and American culture and character as a whole. {Spring}

311. Institutional Racism. (3) Staff
An analysis of the effects 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) Hobson
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}

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 and Democracy. (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}

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 immi-

gration 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. Interdepartmental Seminar in the Culture of the United States. (1-3)‡**
{Summer, Fall, Spring}

***606. Approaches in Interdisciplinary Methodology. (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. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

ANTHROPOLOGY

PROFESSORS P. K. Bock, Ph.D. (Chairperson); L. R. Binford, Ph.D.; J. M. Campbell, Ph.D.; A. A. Ortiz, Ph.D.;[4] K. H. Schwerin, Ph.D.; J. N. Spuhler, Ph.D.; P. L. Workman, Ph.D.; R. H. Lister, Ph.D. (part-time); B. Spolsky, Ph.D. (part-time); ASSOCIATE PROFESSORS R. A. Barrett, Ph.D.; L. Lamphere, Ph.D.;[5] J. M. Sebring, Ph.D.; J. J. Brody, Ph.D., Director, Maxwell Museum of Anthropology; W. J. Judge, Ph.D. (part-time); ASSISTANT PROFESSORS A. L. Alvarado, R.N., Ph.D.; C. H. Bledsoe, Ph.D.; L. S. Cordell, Ph.D.; P. Draper, Ph.D.; J. W. Froehlich, Ph.D.; L. P. Gorbet, Ph.D.; M. E. Harlan, Ph.D.; H. C. Harpending, Ph.D.; J. S. Rhine, Ph.D.; E. S. Rushforth, Ph.D.; L. G. Straus, Ph.D.; J. A. Tainter, Ph.D.; M. M. Weigle, Ph.D.; D. E. Stuart, Ph.D., Research and Project Coordinator, Office of Contract Archaeology.

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. Courses in this core curriculum include:

Linguistic Anthropology:#	Anth 110	Language, Culture, and Man
Archaeology:	Anth 120	Principles of Archaeology
	Anth 320 [392]	Strategy of Archaeology
Ethnology:	Anth 130 [102]	Cultures of the World
	Anth 330	Principles of Cultural Anthropology
Biological Anthropology:	Anth 150 [101]	Primates and Fossil Man
	Anth 350	Introduction to Social Biology

Majors must also elect an additional 15 credits in anthropology courses which may include a maximum of 6 credits in field and/or problems courses.

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

A total of 21 credits, including at least two of the core curriculum sequences (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.

DISTRIBUTED MINORS (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, archaeological science, population science, social biology, applied anthropology, and regional studies (Asian, Southwestern, etc.). Other distributed minors may also be elected through the American Studies Department. 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.

DEPARTMENTAL HONORS

Students seeking departmental honors should enroll in Anth 498 during the spring of their junior year. Seminar topics vary but always include selection of a problem for independent study which the student must complete during the following year by enrolling in either Anth 497 or 499.

ANTHROPOLOGY, GENERAL

(Open to all students without prior courses in anthropology.)

105. The Natural History of Man. (3) Bock
Fundamentals of biological and cultural anthropology: origin of mankind, prehistoric adaptations, 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}

110. Language, Culture, and Man. (3) Gorbet, Rushforth
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}

120. Principles of Archaeology. (3) Staff
Principles of archaeological method and theory. Different lecture sections will emphasize the data base from various geographic areas (i.e., the Southwest, Mesoamerica, Europe, or North America). {Fall, Spring}

125. Man in Nature. (3) Campbell
Man's role in nature shown 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. [102] Cultures of the World. [Development of Culture] **(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. [101] Primates and Fossil Man. [Origin and Antiquity of Man] **(3)** Froehlich, Rhine
Fundamentals of biological anthropology and principles of organic evolution, in relation to the biology, ecology, and behavior of primates and fossil man. {Fall, Spring}

206. Indians of the Southwest. (3)
An intensive study of the Navajo people—their origin, general history, social organization, material culture, relationships with other Southwestern groups, and present-day conditions. {Offered at Gallup Branch only}

245. The Hispanic Culture of the Southwest. (3)
Ethno-history and modern culture patterns of Spanish-speaking peoples of the Southwest. {Offered at Northern Branch only}

***402. American Indian Art I. (3)** Brody
(Also offered as Art Hi 402.) Prehistoric and historic art forms of the Arctic Northwest Coast, Southwest, and Western regions. {Fall 1978 and alternate years}

***403. American Indian Art II. (3)** Brody
(Also offered as Art Hi 403.) Prehistoric and historic art forms of the Plains, Sub-Arctic, and Eastern regions {Spring 1977 and alternate years}

ANTHROPOLOGY, BIOLOGICAL

***331. Biology and Behavior of Primates. (3)** Froehlich
Evolutionary history of primates and the biology and behavior of living primates. Prerequisite: 150 or permission of instructor {Fall}

***332L. Primate Biology Laboratory. (1)** Froehlich
Methods used in the study of primate evolution, classification and ethology. Concurent enrollment in Anth 331 required. {Fall}

***341. Biosocial Bases of Sex Roles. (3)** Draper, Harpending
Biological and sociological bases of sex role differentiation. {Spring}

***350. Introduction to Social Biology.** [Methods in Cultural Anthropology] **(3)** Spuhler, Harpending, Workman
Human heredity, variation, and adaptation within and between different ecological and cultural settings. Elements of human population biology. Selected topics in social biology, such as

[4] On leave 1977-78.
[5] On leave first semester, 1977.
Students intending to elect formal linguistics courses should take Linguistics 292 in place of Anth 110.

medical anthropology, child development, behavior genetics, and historical demography. Prerequisite: 150 or Intro Biol.

*351L. [307L] **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}

*353. **Race, Ethnicity, and Social Status.** (3) Alvarado
Biological and cultural factors in the development and maintenance of racial, ethnic, and minority groups in aboriginal and complex societies. {Fall 1977 and alternate years}

*388. **Human Genetics.** (3) Spuhler
Fundamentals of human transmission, cellular, molecular, developmental, and population genetics. {Fall}

*431. **Problems in Primate Ethology.** (3) Froehlich
Current issues in primate behavioral research; their relevance to the evolution and present condition of man. Prerequisite: 331 or permission of the instructor. {Spring}

*432. **Primate Anatomy.** (3) Froehlich, Rhine
Comparative functional, myological, and osteological anatomy of the primates. Emphasis placed upon dissection and comparison of specimens. 1 hr. lecture, 6 hrs. lab. Prerequisite: 331 or 431. {Spring 1977 and alternate years thereafter}

*450. **Topics in Biological Anthropology.** (3)‡
{Fall, Spring}

*451. **Biology, Society, and Culture** (3) Spuhler
The biological bases of behavior, social behavior of the nonhuman primates, and the evolution of human behavior. {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. Prerequisites: 350 or 388 or equivalent; Math 102 or equivalent. {Spring 1977 and alternate years}

*454. [*343] **Human Population Biology.** [Population Problems in Anthropology] (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. Prerequisite: 150; calculus recommended.

*455. **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}

*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 1978 and alternate years}

495. **Proseminar: Biological Anthropology.** (3)
Class discussion of individual research topics. Students prepare and present a short paper. Prerequisites: senior standing and consent of instructor. {Offered upon demand}

*531. **Seminar: Problems in Primatology.** (3) Froehlich, Rhine
{Spring 1978 and alternate years}

*550. [510] **Topics in Biological Anthropology.** [Seminar: Physical 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.

ARCHAEOLOGY

*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 1978 and alternate years}

*320. [*392] **Strategy of Archaeology.** (3)
The purpose and theory of the study of archaeology; relates archaeology to anthropological principles and the practice of a science. Prerequisites: 120 and 130. {Spring}

*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 1977 and alternate years}

*355. **Southwestern Archaeology—Paleo-Indian.** [Southwestern Archaeology: Mogollon and Hohokam] (3) Cordell
An intensive survey of the Paleo-Indian period in the Southwest and immediately adjacent regions.

*356. **Southwestern Archaeology—Archaic to Present.** [Southwestern Archaeology: Pueblo Area] (3) Cordell
The development of the Mogollon, Hohokam, and Anasazi cultures from their beginnings in the Archaic to the Spanish conquest.

*362. **Topics in Old World Prehistory.** [Archaeology of the Old World] (3) Binford, Straus
The prehistory of specific Old World regions, concentrating on the record of changing Pleistocene adaptations. {Spring 1979 and alternate years}

*366. **Archaeological Field Techniques.** (3) Tainter
Site survey, techniques of excavation, field mapping, data recording, initial laboratory analysis, cataloging, and site reporting. Prerequisites: 120 and permission of instructor. {Spring}

*384. **Mesoamerican Archaeology.** [Archaeology of Mexico, Central America, and the West Indies] (3)
An intensive survey of the archaeology and ethnohistory of Mesoamerica from the lithic stage to the Spanish conquest.

*385. **American Archaeology: North America.** (3) Binford
An 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) Cordell
The archaeology of the continent of South America from the time of the Paleo-Indian to the European period. Emphasis is upon the Andean area. {Spring 1978 and alternate years}

*391. **Classical Archaeology.** (3)
Cultural beginnings of Greece, Rome, and associated cultures in the Mediterranean area from the Neolithic period to the Byzantine empire.

*420. **Topics in Archaeology.** (3)‡

*466. **Archaeological Research Methods.** (3) Straus
Collection, interpretation, and analysis of archaeological and Paleoenvironmental data. Prerequisites: 120 or permission of instructor, intro. statistics; recommended: 320.

*467. **Analytic Methods in Archaeology.** (3) Lister, Judge
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. Prerequisite: permission of instructors.

496. **Proseminar: Archaeology.** (3)
Class discussion of individual research topics. Students prepare and present a short paper. Prerequisites: senior standing and permission of instructor. {Offered upon demand}

*507. **Seminar: Archaeological Theory and Method.** (3)‡
{Spring}

*514. **Seminar: South American Archaeology.** (3)
{Offered upon demand}

*516. **Seminar: European Prehistory.** (3)
{Offered upon demand}

*520. **Topics in Archaeology.** (3)‡

*557. **Seminar: Early Man in the New World** (3)
{Offered upon demand}

*582. **Seminar: American Archaeology.** (3)‡
{Offered upon demand}

*594. **Seminar: Southwestern Archaeology.** (3) Judge
{Offered upon demand}

ETHNOLOGY, GENERAL

Anth 330 is a prerequisite or corequisite for all 400-level ethnology courses.

301-302. **Interdepartmental Studies in the Culture of the United States.** (3, 3)
(See Am St 301-302.)

*305. **The American Indian: North America.** (3) Ortiz, Lamphere
Major culture types and selected enthnographic examples of North American Indian cultures. {Spring}

*306. **The American Indian: Lowland South America.** (3) Schwerin
Origin and development of South American Indian cultures and approaches to their classification. Theoretical approaches to ex-

plaining differential cultural adaptations in a variety of temperate and tropical environments, with detailed discussion of selected ethnographic examples. {Fall 1977 and alternate years}

*307. **The American Indian: Highland South America.** (3) Schwerin
Origin and development of Indian cultures in South America and approaches to their classification. Analysis of the development of social and political organization as means for exploiting the diversity of Andean environments. {Fall 1978 and alternate years}

*308. **Psychological Anthropology.** (3) Bock
Materials and concepts useful in understanding the influence of group culture upon personality and of the individual upon his society. {Spring 1979 and alternate years}

*309. **Comparative Studies of Socialization.** [Comparative Studies of Childhood.] (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.

*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)
Presentation of 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. {Spring}

*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}

*325. **The Peoples of Oceania.** (3) Froehlich
Prehistory, biology, and culture of Pacific Islanders. {Fall 1977 and alternate years}

*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.

*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. [*357] **Indian Culture Change in the Southwest: Hispanic Period.** [Southwestern Ethnology: Non-Pueblo Peoples] (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. [*358] **Indian Culture Change in the Southwest: Modern Period.** [Southwestern Ethnology: Pueblo Peoples] (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
An investigation of 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.

*341. **Biosocial Bases of Sex Roles.** (3) Draper, Harpending
Biological and sociological bases of sex role differentiation. {Spring 1977}

*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 1979 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.** [Anthropological Folklore] (3) Weigle
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. {Spring}

*371. **Images of the Indian in American Culture.** [Indian-White Relations: Native American Viewpoints] (3)
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.

*382. **Middle American Ethnology.** (3) Schwerin
Emergence of the modern Indian cultures of Mexico and Guatemala. Persistence and change in social institutions and cultural patterns {Spring}

*383. **Caribbean Ethnology.** (3)
A descriptive and analytic survey of modern West Indian sociocultural systems, taking into consideration their African, European, and East Indian cultural antecedents. {Offered upon demand}

*396. **Cultural Ecology.** (3)
Presentation of 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 1977 and alternate years}

*404. **Comparative Social Structure.** (3)
An introduction to the study of kinship and social organization. {Offered upon demand}

*406. **Economic Anthropology.** (3)
Introduction through case material to the forms of economic organization in non-Western societies; analyses of production, distribution, and consumption, the evolution of economic systems, and the relations of economy to society. {Fall 1978 and alternate years}

*421. **Political Anthropology.** (3)
Investigation of political organization in primitive societies, with emphasis on political processes. {Fall 1977 and alternate years}

*430. **Topics in Ethnology.** (3)‡
{Fall, Spring}

*435. [*399] **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}

*436. [*398] **Ritual Symbols and Behavior.** (3) Ortiz
Comparative analysis of ritual processes, symbol systems, and world views in the context of social structure. {Fall}

*437. [*389] **Cultural Evolution.** (3) Schwerin
Nineteenth-century theories of cultural evolution and revival of the evolutionary view in contemporary anthropology. Selected cultural examples are analyzed in terms of modern theories, exploring how contemporary industrial societies fit into the evolutionary schema. Prerequisites: 130, 330.

*438. **Agriculture and Ethnobotany in Cross Cultural Comparison.** (3) Schwerin
Man's relationship to plants; their utilization for a variety of cultural ends. Impact of agriculture on cultural systems, agricultural techniques and their relationship to social structures. Origin, development, and spread of selected major crop species.

*439. [*310] **Peasant Cultures of the World.** (3) Barrett, Bock
A comparative study of peasantry. Focuses on the social and economic organization of peasant societies and the relationship of these groups to the civilizations of which they are a part. {Fall 1978 and alternate years}

*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.

*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.

*488. **Advanced Methods in Ethnology.** [Formal and Numerical Methods in Anthropology] (3)
The implementation of research designs in ethnology. Analysis, interpretation, and presentation of ethnological data. Prerequisite: 487 or permission of instructor; recommended: Math 102.

*493. **History of Anthropology.** (3)
The development of anthropological theory from the nineteenth century to the contemporary period, with major emphasis on cultural anthropology. {Spring}

494. **Proseminar: Ethnology.** (3)
Class discussion of individual research topics. Students prepare and present a short paper. Prerequisites: senior standing and permission of instructor. {Offered upon demand}

*530. [*512] **Topics in Ethnology.** [Seminar: Ethnology] (3)‡
{Fall, Spring}

*536. **Seminar: Symbolism and Ritual.** (3)

*537. [*595] **Seminar: Southwestern Ethnology.** (3)
{Fall 1977 and alternate years}

*538. [*508] **Seminar: Culture Change.** [Processes of Culture Change] (3) Alvarado
{Fall 1978 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. [*513] **Seminar: Anthropological Problems in Latin America.** (3)
{Spring}

*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 317, 318, 359, 417, 418, 446, 470, and 554 are also offered 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, but only anthropology courses may be applied toward an anthropology minor.

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. Prerequisite: 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, Spolsky
(Also offered as Ling 359.) An examintion 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 1979}

*410. **Topics in Anthropological Linguistics.** (3)‡
May be repeated as subject matter varies.

*413. [*313L] **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 1978}

*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. {Spring 1979}

*470. [*370] **History of Linguistics.** (3) Spolsky
(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. {Fall 1978}

*510. **Topics in Anthropological Linguistics** [Seminar: Physical Anthropology] (3)‡

*554. **Seminar: Linguistic Theory.** (3)‡
(Also offered as Ling 554.) May be repeated for credit as subject matter varies. {Offered upon demand}

TECHNICAL

290. **Introduction to Anthropological Research.** (3)
The use and abuse of inductive, deductive, and nondeductive inference in anthropological research. Survey of elementary statistical principles and methods. Emphasis on cross-cultural analyses. Prerequisites: two courses from Anthro 110, 120, 130, or 150; Math 120 or equivalent.

304. **Beginning Museology** (3)
History, philosophy, and purpose of museums. Techniques and problems of museum administration, education, collection, exhibition, conservation, and public relations. {Fall 1977 and alternate years}

*460. **Seminar in Museology and Museography.** (3) Brody
(Also offered as Art Hi 460.) Practical and theoretical work in specific museum problems. Prerequisite: 304 or Art Hi 400 or permission of instructor.

*489. **Computer Models in Anthropology.** (3) Harpending
Introductory theory and practice of the use of high speed computers to solve anthropological problems. Prerequisites: Math 155 or equivalent ability with a programming language compatible with the campus computer, basic course in statistics with elementary probability theory, and graduate standing in anthropology or permission of instructor. {Offered upon demand}

*490. **Topics in Mathematical Anthropology.** (3)
Formal and mathematical approaches to anthropological research. Topics include graphs and networks, linear systems and filtering, probability models. Prerequisites: calculus (recommended: linear algebra) and a computer language.

INDIVIDUAL STUDIES, FIELD PROGRAMS, AND HONORS COURSES

275F. **General Field Session.** (2-6)
Introductory summer field course in archaeology, linguistics, or general ethnology. {Summer only}

399F. **Introduction to Field Research.** (2-6)
Directed study under the supervision of faculty member. Prerequisite: permission of instructor. {Offered upon demand}

*475F. **Advanced Summer Field Session.** (2-6)
For upper-division and graduate students. Field course in archaeology, linguistics or general ethnology. This advanced course includes intensive instruction in field techniques and opportunity for independent research (on the part of the student). Prerequisite: 275F or equivalent. {Summer only}

497. **Individual Study.** (1-3 hrs. per semester, to a maximum of 6)
Directed study of topics not covered in regular courses.

498. **Honors Seminar.** (3) Staff
Readings and discussions concerning anthropological research methods, sources, goals, and professional ethnics. Open to upper division majors and concentrators whose applications for the honors programs have been approved. {Spring}

*499F. **Field Research.** (2-6)
Field research for qualified advanced or graduate students with previous experience in archaeology, linguistics, or general ethnology. Problems are selected on the basis of student-faculty in-

terest and field research opportunities. Prerequisite: permission of staff. {Offered upon demand}

*597. [551] **Problems. (1-3 hrs. per semester, to a maximum of 6)**
Limited to graduate majors in the master's program.

*598. [511] **Advanced Research. (3)‡**
Limited to graduate majors in the master's program.

*599. **Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

*697. [552] **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. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

ARCHITECTURE AND PLANNING

DEAN Morton Hoppenfeld, MCP; PROFESSORS R. C. Cohlmeyer, B.S.; D. P. Schlegel, M.Arch.; ASSOCIATE PROFESSORS R. Anderson, Ph.D.; P. Lusk, MCP; P. Montague, Ph.D.; R. S. Nordhaus, M.Arch.; M. Pillet, M.Arch; W. F. E. Preiser, Ph.D.; W. J. van der Meer, M.S.; R. Walters, B.F.A.; ASSISTANT PROFESSOR E. Cherry, M.Arch.; LECTURER D. Kal, M.Arch.; PART-TIME, VISITING, AND ADJUNCT FACULTY H. Barker, B.Arch.; V. D. Hooker, B.Arch.; J. Jaramillo, M.P.U.S.; R. McCabe, MCP; B. Morrow, B.A.; A. Taylor, Ph.D.

Students are reminded that charges for classroom supplies and services for certain architecture courses must be paid at the School office 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.

CURRICULUM

101. **Introduction to Architecture. (3)**
Architecture—the social, historical, perceptual, and technical determinants; current and likely future directions; the people and processes involved. {Fall or Spring}

103. **Introduction to the Designed Environment. (3)**
An interdisciplinary view of the built environment—the development of the relationships between architecture, planning, and environment. Focus is on both the importance and the challenge of fully synthesizing these related areas in the quest for a humane environment. Team-taught by an architect, a planner, and an environmentalist. {Spring}

104L. **Introduction to Design Skills.** [Visual Communications] **(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. 1 lecture, 2 hrs. lab. {Fall, Spring}

165. [161] **Introduction to the City. (3)**
Discussion of the interrelations of the physical form and the social, economic, political, and cultural life of the evolving city. {Fall or Spring}

181. **Introduction to Environmental Problems. (3)**
The relation of man to his physical environment. {Fall}

°201. **Design I. (4)**
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 C or better in Arch 104 or faculty approval of equivalent work. {Fall}

°202. **Design II. (4)**
Continuation of 201. Prerequisite: 201. {Spring}

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. {Fall}

271. [281] **Design and Behavior: Introduction.** [Environment and Behavior] **(3)**
Issues and case studies on relationships between the built environment and its users. {Fall}

281. [282] **Environmental Impact Review. (3)**
Principles and techniques of evaluating the impact of man-made structures on the environment. {Spring}

285. [385] **Building Technology I. (3)**
Lab and lectures—Introduction to technological aspects of building design and construction. {Spring}

°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 lectures on design concepts and methods, emphasis on group work. Prerequisite: 301 or equivalent. 1 lecture, 3 hrs. lab. {Spring, Summer}

338. **The City in History. (3)**
(Also offered as Hist 338 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}

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. {Spring}

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 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)**
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}

366. **Urbanization and Housing (3)**
Study of migration to urban areas with emphasis on housing in the United States and developing countries, including a survey of available governmental programs. {Spring}

373. **Programming for Design. (3)**
Lecture and case study evaluation. Concepts and methods for converting social objectives and problems into operational design criteria. {Fall, Spring}

385. **Building Technology II. (3)**
Lectures on analysis for building energy systems such as thermodynamics, heat transfer, solar and conventional energy use. Prerequisite: 1 semester of physics.

386. **Building Technology III. (3)**
Lecture and lab. 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. {Spring, Summer}

429. **Problems. (1-3)‡**
Students wishing to undertake a special study project must have instructor approval. {Fall, Spring}

°°430. **Internship. (1-4)**
Planned program of actual experience with an employer such as an architect, planning agency, engineering consultant, or building contractor, plus 2-hr. weekly seminar. {Summer, Fall, Spring}

*431. **Professional Practice. (2)**
A seminar which deals with the issues involved in the establishment and operation of an architectural practice. The issues deal with ethics, certification, forms of practice, and office management. {Fall or Spring}

*457. **Landscape Architecture: Advanced. (3)** Morrow
Design development exercises and intensive study of landscape architectural history, professional practice, plant materials, and

°Open only to students enrolled in the School of Architecture and Planning or by special permission of the instructor.

landscape architecture as a function of site planning and urbanism. Special attention is paid to New Mexico conditions. {Spring}

*462. **Seminar.** (2)
Individually listed topics each semester. {Fall, Spring}

*464. **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 or Spring}

465. **Urban and Regional Planning Methods.** (3)
(Also offered as Econ and Pol Sci 465.) Readings and case studies of city- and regional-scale planning process, integrating social science and physical design methods. {Fall or Spring}

*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)
This course will present an overview of the statistical, behavioral, and hybrid research concepts and methods which are rapidly evolving to add knowledge in the field of architecture and urban and environmental design. Each student will engage in an area of in-depth research and self-chosen exercise.

*468. **Urban Design Practice.** (3)
Lectures plus individual and group exercises to identify urban design problems, working processes, and prototype solutions. Prerequisite: 365 or permission of instructor. {Spring}

*471. **Design and Behavior: Concepts.** [Cooling] (3)
Exploration of current theoretical concepts of relationships between the built environment and its users. Case study applications. Prerequisite: 281 or permission of instructor. {Spring}

*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.** (3)
A study of the built environment as cultural evidence. Techniques are developed for analyzing the cultural and social implications of the built environment. {Fall}

481. **Design and Behavior: Concepts.** [Cooling] (3)
Exploration of current theoretical concepts of relationships between the built environment and its users. Case study applications. Prerequisite: 281 or permission of instructor. {Spring}

482. **Lighting.** (2)

483. **Acoustics.** (2)
Concepts, theory, and methodology for analysis and design of acoustical environments. {Fall}

*484. **Building Systems Estimating.** (2)
Sources of building costs, methods for determining costs, a systems approach for cost estimating. Prerequisite: 285. {Fall}

*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}

*497. **Social Planning Seminar.** (2)
Consequences of social and cultural change on design and planning. Prerequisite: senior standing. {Fall}

*498. **Design and Planning Assistance Center.** [Community Design Studio] (6)‡
Architectural and planning services to organizations and groups throughout the state who cannot afford traditional professional services. May repeat to a total of 12 hours. Advanced approval required. {Summer, Fall, Spring}

499. **Comprehensive Review.** (8)‡
An overview of the architectural undergraduate curriculum. Prerequisite: for graduate students in architecture with degrees from other disciplines. {Fall, Spring}

*501. **Interdisciplinary Design Studio.** [Studio Workshop.] (6)
May be repeated to a total of 12 hours. Entry by graduate standing or special permission. (Undergraduates with senior standing may be admitted) {Fall, Spring}

*551. **Problems.** (1-3)
May be repeated to a total of 12 hours. {Fall, Spring}

*562. **Seminar.** (2)
{Fall, Spring}

*563. **Housing Seminar.** (2)
{Fall}

*564. **Regional Planning Seminar.** (2)
{Spring}

*571. **Design and Behavior: Field Research.** (3)
Undergraduates with senior standing may be admitted. {Fall}

*572. **Design and Behavior: Theory.** (3)
Undergraduates with senior standing may be admitted. {Spring}

*582. **Advanced Environmental Analysis.** (3)
May be repeated for credit.

*588. **Independent Design Project I.** (4)
Prerequisite: 501, 502 or equivalent; advance approval by faculty member. Plan II only. {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.

ART

PROFESSORS N. Cikovsky, Jr., Ph.D. (Chairperson); C. Adams, M.A.; G. Z. Antreasian, B.F.A.; B. Bunting, Ph.D.; ; V. D. Coke, M.F.A.; R. Lewis, M.A.; C. E. Paak, M.A.; S. D. Smith; VISITING PROFESSOR B. Newhall, M.A.; ASSOCIATE PROFESSORS T. Barrow, M.S.; J. J. Brody, Ph.D.; R. Ellis, M.F.A.; B. Hahn, M.F.A.; H. Nadler, M.A.; M. E. Smith, Ph.D.; P. Walch, Ph.D.; VISITING ASSOCIATE PROFESSORS G. Laing; P. Suttman, M.F.A.; ASSISTANT PROFESSORS N. Abdalla, M.A.; J. Abrams, M.F.A.; C. Engle, Ph.D.; D. George, M.A.; W. R. Lazorik, M.F.A.; N. von Bujdoss, M.F.A.; J. Wenger, M.F.A.; INSTRUCTORS B. Anderson, M.Phil.; J. Bettelheim, M.Phil.; R. Sweet, M.F.A.; LECTURERS L. Barrow, B.A. (part-time); J. Booth, M.A. (part-time); C. Downey, M.A. (part-time); M. McConnell, M.A.; K. McElroy, M.L.A.; H. D. Rodee, Ph.D.; J. Sommers, B.A. (part-time); and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 118.

MAJOR STUDY

1. For the student enrolled in the College of Fine Arts who wishes to pursue a studio emphasis, a 70-hour major offered under the preprofessional curriculum leads to the degree of B.F.A. (See curriculum, p. 67.)

2. For the student enrolled in the College of Fine Arts who wishes to pursue an art history or an art studio emphasis, a 48-hour major offered under the general (liberal arts) curriculum leads to the degree of B.A. in Fine Arts. (See curriculum, p. 67.)

3. For the student enrolled in the College of Arts and Sciences, a 32-hour major may be taken with an emphasis either in studio or art history. Of these 32 hours, at least 12 must be in courses numbered above 300.

The major with an emphasis in studio is as follows:
8 hours of art history, and
24 hours in studio courses, including 123.

The major with an emphasis in art histroy is as follows:
20 hours in art history courses, including 201 and 202, and
12 hours in studio courses, including 123.

MINOR STUDY

The minor in art in either art studio or art history consists of 21 semester hours distributed as follows:
6 hours of 123, and
15 hours of art studio or art history or a combination of both, of which at least 6 hours must be at the 300-level or above.

MATERIALS AND STUDENT WORK

Students enrolling in art courses furnish their own materials except for certain studio equipment provided by the University.

All work when completed is under the control of the Department until after the exhibitions of student work. Each student may be requested to leave one or more pieces of original work with the Department.

Students are reminded that charges for classroom supplies and services in certain art studio courses must be paid at the Fine Arts Box Office 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. 18.

*Open only to students enrolled in the School of Architecture and Planning or by special permission of the instructor.

ART STUDIO

NON-MAJOR COURSES

The following courses are specifically designed as introductions to studio art for those students who do not intend to major or minor in art. No previous preparation is expected.

102. Painting for Non-majors. (3)‡ Staff
Basic principles of still life, figure, and landscape painting. {Fall, Spring}

105. Watercolor Painting for Non-majors. (3)‡ Staff
Principles of watercolor painting, with an emphasis on landscape. {Fall, Spring}

110. Sculpture for Non-majors. (3)‡ Staff
Principles of sculptural form, techniques, and materials. {Fall, Spring}

115. Ceramics for Non-majors. (3)‡ Staff
Introduction to the forms, methods, and materials of ceramics. {Fall, Spring}

120. Jewelry and Metalwork for Non-majors. (3)‡ Staff
Introduction to the design, materials, and techniques of jewelry and metalwork. {Fall, Spring}

142. Drawing for Non-majors. (3)‡ Staff
Principles, mechanics, and materials of descriptive drawing. {Fall, Spring}

185. Photography for Non-majors I. (3) Staff
Introduction to cameras, materials, processes, and photographic vision. {Fall, Spring}

186. Photography for Non-majors II. (3)‡ Staff
Continuation of 185, with greater emphasis on the aesthetics of photography. Prerequisite: 185. {Fall, Spring}

MAJOR COURSES

Art 123 is prerequisite to all art studio courses and is designed for students who plan to major or minor in art.

123. Studio Fundamentals. (6)
Basic aspects of two- and three-dimensional phenomena, including drawing and color theory. Corequisite: Art Hi 130. {Summer, Fall, Spring}

187. Photography Fundamentals. (3)
Introduction to photographic vision and photographic technique. Suggested corequisite: 123. {Summer, Fall, Spring}

205. Drawing I. (3)‡‡
Introduction to the basic materials and mechanics of drawing. Emphasis on the development of descriptive and perceptual skills. Prerequisite: 123 or equivalent. {Fall, Spring}

207. Painting I. (3)‡‡
Introduction to painting with basic instruction in materials, techniques, composition, and color theory. Emphasis on the development of descriptive and perceptual skills. Prerequisite: 123 or equivalent; pre- or corequisite: 205. {Fall, Spring}

213. Sculpture I. (3)‡‡
Introduction to sculptural tools, materials, and ideas. Prerequisite: 123 or equivalent; corequisite: 205. {Fall, Spring}

221. Navajo Weaving. (3)‡‡
Beginning Navajo weaving. Prerequisite: 123 or equivalent. May be repeated twice. Does not carry credit toward degree in art. {Offered only at Gallup Branch}

257. Beginning Jewelry and Metalwork. (3)‡‡
The handworking of various metals. Prerequisite: 123 or equivalent; corequisite: 205. {Fall, Spring}

268. Beginning Ceramics. (3) Paak, Sweet
Ceramic techniques. Prerequisite: 123 or equivalent; corequisite: 205 or 213. {Summer, Fall, Spring}

274. Introduction to Printmaking (3)‡‡
Introduction to the fundamental techniques, processes, and expressive potentials of lithography, intaglio, and serigraphy printmaking. Prerequisites: 123, 205, 207; corequisite: 305 or 307. {Fall, Spring}

277. Graphic Design. (3) Barrow
(Also offered as Journ 277.) Graphic design and communication. Prerequisite: 123. {Spring}

287. Photography I. (3)
Continuation of 187, with concentration on photographic techniques and the formal aspects of photographic vision. Prerequisite: 187; pre- or corequisites: 123 or equivalent, Art Hi 225. {Fall, Spring}

293. Beginning Watercolor Painting. (3)‡‡ S. D. Smith
Emphasis on the landscape. Prerequisites: 205, 207. {Offered upon demand}

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; corequisite: 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}

325. Drawing IV. (3)‡‡
Pretutorial preparation of individual technical and intellectual resources for advanced course work. Prerequisite: 306; corequisite: 423. {Fall, Spring}

327. Painting IV. (3)‡‡
Pretutorial preparation for individual advanced course work. Prerequisite: 308; corequisite: 423. {Fall, Spring}

335. [435] Intaglio Printmaking. (3)‡‡ Abrams
Exploration of the aesthetic and technical aspects of intaglio printmaking. Prerequisite: 305. {Fall, Spring}

345. [445] Serigraphy. (3)‡‡
Techniques, methods, and aesthetic dimensions of screen printing. Prerequisite: 306. {Fall, Spring}

357. Intermediate Jewelry and Metalwork. (3)‡‡ Lewis
Development of metalworking techniques with emphasis on the creative application of various skills. Prerequisite: 257. {Fall, Spring}

368. Intermediate Ceramics. (3)‡ Paak, Sweet
Experimental approaches to ceramics. Prerequisite: 268. {Summer, 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. Prerequisite: 374. {Fall, Spring}

386. Photography II. (3)
Continuation of 287, with concentration on the development of personal vision. Prerequisite: 287; pre- or corequisite: Art Hi 426. {Fall, Spring}

387. Photography III. (3)‡‡
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 426. {Fall, Spring}

°389. Topics in Photography. (3)‡
Concentrated practical and historical study of specific concerns in photography. Prerequisite: 386; corequisite: Art Hi 426. {Offered upon demand}

***405. Advanced Drawing. (3)‡‡** Ellis, Nadler
Individual work in drawing as an expressive medium and as a vehicle for developing advanced concepts in the visual arts on a tutorial basis. Prerequisites: 306, 325, and submission of portfolio for departmental approval. {Fall, Spring}

***406. Computer Graphics. (3)‡‡**
Generalized course for developing graphic images by electronic computer and electronic plotter. {Offered upon demand}

***407. Advanced Painting. (3)‡‡** Ellis, Nadler
Intensive individual investigation of the materials, methods, and conceptual problems of painting on a tutorial basis. Prereq-

‡‡ May be taken twice for credit.

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uisites: 308, 327, and submission of portfolio for departmental approval. {Fall, Spring}

*408. **Advanced Landscape Painting.** (3)‡‡ S. D. Smith
Landscape painting in various media. Prerequisites: 305, 307. {Offered upon demand}

*413. **Advanced Sculpture.** (3)‡‡
Investigation of individual problems based on a thorough knowledge of materials and methods. Prerequisite: 314. {Fall, Spring}

423. **Tutorial Preparation.** (3)‡
Advanced problems in theory and perception as preparation for tutorial study. Prerequisites: 123, Art Hi 130, 201, 202, and a minimum of 12 hours (including corequisites) in one area of specialization. {Fall}

°429. **Workshop.** (1-4)‡
Course work determined by specific student need. {Fall, Spring}

*457. **Advanced Jewelry and Metalwork.** (3)‡‡ Lewis
Experimental use of metal-working processes. Prerequisite: 357. {Fall, Spring}

*468. **Advanced Ceramics.** (3)‡‡ Paak
Experimental approach to ceramics based on a thorough knowledge of processes. Prerequisite: 368. {Summer, Fall, Spring}

*474. **Advanced Lithography.** (3)‡‡ Antreasian
Continuation of 374. Prerequisites: 374, 405. {Fall, Spring}

*475. **Business Systems in Lithography Workshops.** (2) Booth
Application of systems theory to the structure of a business environment for preservation of the art of lithography. Emphasis on the application of management techniques in the planning, directing, and control of print shop business operations. {Fall}

*476. **Business Systems in Lithography Workshops.** (2) Booth
Continuation of 475. Research and synthesis of small business practices which contribute to successful art entrepreneurship. Specific consideration of capital funding, marketing methods, and financial management. {Spring}

*486. **Techniques of Photography.** (3)‡‡
Exploration of special equipment and such processes as photo-silk-screening, film strips, photo montage, high contrast film use. Prerequisite: 386. {Fall, Spring}

*487. **Advanced Photography.** (3)‡ Barrow, Coke
Advanced concepts of photography as applied to the development of personal expression. Prerequisites: 386, 387, Art Hi 425, and 426. {Fall, Spring}

°493. **Seminar in Studio Art.** (3)‡
{Fall, Spring}

°495. **Tutorial.** [Tutorial Critique] (6-9)‡ Tutorial Staff
Advanced, individually directed study. Prerequisites: 423; 3.0 GPA; portfolio. {Fall, Spring}

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}

*529. **Workshop.** (1-4)‡
Course content determined by specific student need. {Fall, Spring}

*593. **Seminar in Studio Art.** (3)‡
{Fall, Spring}

*595. **Tutorial.** (6-12)‡
Advanced, individually directed study. Open to graduate students only. {Fall, Spring}

*598. **Final Project.** (3)
Prerequisite: advancement to candidacy. {Fall, Spring}

*599. **Master's Thesis.** (1-6)
{Fall, Spring}

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements. {Fall, Spring}

ART HISTORY

101. **Art Appreciation** (for non-majors). (3)
Introduction to the visual arts, with emphasis on the various fields, media, and masterpieces. {Summer, Fall, Spring}

130. **Contemporary Art.** (3) Ellis, Walch
Emphasis will be given to the theoretical bases of the major movements since Impressionism. {Fall, Spring}

151. **Artistic Traditions of the Southwest.** (3) McElroy
(Also offered as Fine Arts 151.) Pre-Columbian, American Indian, Spanish Colonial, territorial, and modern traditions in art, dance, music, and theater. {Spring}

201. **History of Art I.** (3) Anderson, Bunting, George
Prehistoric, Near Eastern, Egyptian, Greek, Roman, Early Christian, Byzantine, Romanesque, and Gothic Art. {Fall, Spring}

202. **History of Art II.** (3) George, Rodee
Western art from the Early Renaissance to Impressionism. {Fall, Spring}

203. **Ethnic Art.** (3) Bettelheim
Introductory survey of the traditional arts of Africa, Oceania, Native North and South America, and the Afro-Caribbean, studied in their cultural contexts. {Fall, Spring}

225. **History of Photography from 1827 to 1945.** (3) Barrow, Coke, Hahn
History of photography from 1827 to 1945 with emphasis on early processes and artistic movements. Pre- or corequisite: 202. {Fall, Spring}

261. **Ancient and Medieval Architecture.** (3) Bunting
{Fall}

262. **Renaissance and Baroque Architecture.** (3) Bunting
{Spring}

301-302. **Interdepartmental Studies in the Culture of the United States.** (3, 3)
(See Am St 301-302.) {Offered upon demand}

303. **Chinese and Japanese Art.** (3)
{Offered upon demand}

304. **Beginning Museology.** (3) Brody
(See Anth 304L.)

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 civilizations. {Spring}

361. **Architecture Since 1750.** (3) Pillet
(Also offered as Arch 361.) {Fall}

*400. **Museum Practices.** (3)‡‡ Coke
Practical and theoretical work in museum practices such as registration, conservation, exhibition, and cataloging works of art. {Fall, Spring}

*401. [320] **African and Oceanic Art.** (3) Bettelheim
{Spring}

*402. **Native American Art I.** (3) Bettelheim, Brody
(Also offered as Anth 402.) Prehistoric and historic art forms of the Arctic Northwest coast, Southwest, and Western regions. {Fall}

*403. **Native American Art II.** (3) Bettelheim, Brody
(Also offered as Anth 403.) Prehistoric and historic art forms of the Plains, Sub-Arctic, and Eastern regions. {Spring}

*411. [340] **Pre-Columbian Art.** (3) M. E. Smith
Art of Middle America prior to the sixteenth century. {Fall}

*420. [370] **History of the Graphic Arts.** (3)
Printmaking from the thirteenth century to the present. {Fall}

*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}

*430. [350] **Greek and Roman Art.** (3) Anderson
Painting and sculpture from 1800 B.C. to the sixth century A.D. {Fall}

*440. [351] **Early Medieval and Byzantine Art.** [Medieval Art I] (3) Bunting
Architecture, painting, and sculpture from the dissolution of the Roman empire to the eleventh century. {Fall}

*441. [352] **Romanesque and Gothic Art.** [Medieval Art II] (3) Bunting
Architecture, painting, and sculpture from the twelfth century through the sixteenth century. {Spring}

*450. **Spanish Colonial Art.** (3) Anderson
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}

‡‡ May be taken twice for credit.

* 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.

*451. **Renaissance Art in Italy.** [Fifteenth and Sixteenth Century Art in Italy] (3) Bunting
Painting and sculpture from the late fourteenth century through Mannerism. {Fall}

*452. **Renaissance Art in Northern Europe.** [Fifteenth and Sixteenth Century Art in Northern Europe] (3) Rodee
Painting and sculpture from the late fourteenth century through Mannerism. {Spring}

*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.

*463. **17th-Century Art in Europe.** (3) Rodee
Painting, sculpture, and architecture of the Baroque. {Fall}

*464. **18th-Century Art in Europe.** (3) Walch
{Spring}

*471. **Hispanic Art.** (3) Anderson
Survey of Hispanic art in Europe. {Fall}

*472. **Art of the United States.** (3) Cikovsky, George
Painting and sculpture from 1675–1875. {Fall}

*477. [475] **American Architecture.** (3) Bunting
History of American architecture from the seventeenth century to World War II. {Spring}

*479. **American Art: 1876–1940.** (3) Cikovsky, George
Painting and sculpture from the Centennial Exhibition to the beginning of World War II. {Spring}

*481. **19th-Century Art.** (3) Rodee
Painting and sculpture from Romanticism through post-Impressionism. {Fall}

*482. **Early 20th-Century Art.** [Foundations of Modern Art] (3) Walch
Painting and sculpture from 1900 to 1940. {Fall}

*483. **Latin American Art of the 19th and 20th Centuries.** (3) M. E. Smith
Prerequisite: 130 or equivalent. {Spring}

490. **Interdepartmental Proseminar.** (3) Staff
(See FA 490.) {Fall}

*491. **Late 20th-Century Art.** [20th Century Art] (3) Walch
Painting and sculpture, 1940 to the present. {Spring}

*492. **Art Criticism.** (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}

*494. **Topics in Art History.** [Problems in Art History] (2-3)
Course work determined by specific student request or by the professor's current research. {Offered upon demand}

496. **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.** [Bibliography and Research] (3) Bunting, Walch
{Fall}

*501. **Interdepartmental Seminar in the Culture of the United States** (3)
(See Am St 501.) {Offered upon demand}

*551-552. **Problems.** (2-3 hrs. each semester)
Maximum 6 hours. {Fall, Spring}

*559. **Seminar in Native American Art.** [Problems in Native American Art] (3)‡ Bettelheim, Brody
Prerequisites: 402 and/or 403. {Spring}

*560. **Seminar in Pre-Columbian Art or African Art or Oceanic Art.** [Problems in Pre-Columbian Art or African Art or Oceanic Art] (3)‡ Bettelheim, M. E. Smith
Prerequisites: 401, 411 or their equivalents, depending upon content, and reading knowledge of Spanish. {Fall}

*561. **Seminar in Ancient and Medieval Art.** [Problems in Ancient and Medieval Art] (3)‡
Prerequisites: 430, 440, 441, depending upon content. {Offered upon demand}

*571. **Seminar in Renaissance and Baroque Art.** [Problems in Renaissance and Baroque Art] (3)‡
Prerequisites: 451, 452, 463, 464, depending upon content. {Offered upon demand}

*572. **Seminar in the Art of the United States.** [Problems in the Art of the United States] (3)‡ Bunting, Cikovsky, George
Prerequisite: 472 or 479, depending upon content. {Spring}

*580. **Seminar in Spanish Colonial Art.** [Problems in Spanish Colonial Art] (3)‡ Anderson, Bunting, M. E. Smith
Prerequisites: 450 and reading knowledge of Spanish. {Fall}

*581. **Seminar in 19th-Century Art.** [Problems in 19th Century Art] (3)‡ Newhall, Rodee
Prerequisite: 481. {Fall, Spring}

*582. **Seminar in 20th-Century Art.** [Problems in 20th Century Art] (3)‡ Adams, Cikovsky, Newhall, Walch
Prerequisite: 482 or 491. {Fall, Spring}

*592. **Seminar in Art Since 1950.** [Art Since 1950] (3) Adams, Cikovsky, Walch
Prerequisite: 491 or equivalent. {Fall, Spring}

*594. **Topics in Art History.** (3)

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements. {Fall, Spring}

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements. {Fall, Spring}

ASIAN STUDIES

COMMITTEE IN CHARGE: Associate Professor C. McDermott, Ph.D. (Philosophy), (Chairperson); Assistant Professor D. Gordon, M.A. (Geography); Professor F. Iklé, Ph.D. (History); Assistant Professor J. Sebring, Ph.D. (Anthropology); Professor J. Sorenson, Ph.D. (Political Science).

MAJOR STUDY

Not offered.

UNDERGRADUATE MINOR

An 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 330, 331, 336, 337; History 251, 252, 350, 354, 356, 370, 371, 451-452, 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; Political Science 450; English 300 when topic is appropriate.

BIOLOGY

PROFESSORS C. S. Crawford, Ph.D. (Chairperson); W. G. Degenhardt, Ph.D.; J. S. Findley, Ph.D.; D. E. Kidd, Ph.D.; J. D. Ligon, Ph.D.; W. Martin, Ph.D.; L. D. Potter, Ph.D.; M. L. Riedesel, Ph.D.; ASSOCIATE PROFESSORS J. S. Altenbach, Ph.D.; L. Barton, Ph.D.; E. W. Bourne, Ph.D.; D. W. Duszynski, Ph.D.; J. R. Gosz, Ph.D.; G. V. Johnson, Ph.D.; W. W. Johnson, Ph.D.; R. O. Kelly, Ph.D.; P. Kerkof, Ph.D.; R. W. Waterman, Ph.D.; ASSISTANT PROFESSORS O. G. Baca, Ph.D.; D. E. Caldwell, Ph.D.; R. G. Cates, Ph.D.; E. P. Ewing, Ph.D.; T. Kogoma, Ph.D.; M. C. Molles, Ph.D.; F. S. Taylor, Ph.D.; R. A. Thornhill, Ph.D.; E. C. Toolson, Ph.D.; J. L. Trujillo, Ph.D.; INSTRUCTORS L. R. Berger, M.S.; S. Bruner, M.S.; M. J. Hastings, M.S.; ADJUNCT PROFESSORS C. Bogert, Ph.D.; R. Conant, Ph.D.; U. Luft, M.D.; D. Lundgren, Ph.D.; R. McClellan, D.V.M.; R. E. Pfleger, Ph.D.; G. Rypka, Ph.D.; N. J. Scott, Ph.D.; PROFESSORS EMERITI E. F. Castetter, Ph.D.; H. J. Dittmer, Ph.D.; M. W. Fleck, Ph.D.; C. C. Hoff, Ph.D.; W. J. Koster, Ph.D.; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 118.

MAJOR STUDY

Biol 121L-122L, 221, 222, and 429 plus sufficient elective courses in biology to total 37 hours (Biol 110, 111, 123L, 136, 139L, 237, 238L, 239L, 247, and 248L will not be allowed for biology majors); Math 162 or 180 and 181; Physcs 151 and 152; Chem 121L-122L or 131L-132L, and 212 or 301-303L. (Chem 212 not allowed for chemistry minor; credit not allowed for both Chem 212 and 301; 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.

The biology electives allow a student to specialize in one or more areas if desired. Department advisers are available to consult with students who consider specializing. Areas of emphasis for which course recommendations are available include the following subjects and some of their subdivisions: botany, cell biology, ecology, evolutionary biology, microbiology, molecular biology, physiology, population biology, and zoology.

MINOR STUDY

Biol 121L-122L, 221, 222, and 6 additional hours of biology except Biol 110, 111, or 123L. Grades of C or better are required in biology courses used for a minor.

MINOR STUDY IN PALEOECOLOGY

See p. 37.

CURRICULA PREPARATORY TO DENTISTRY, FORESTRY, OR MEDICINE

See p. 37.

Note: Credit will not be allowed for 136-139L and 237-247L or 238-248L; nor for 110-111 and 121L-122L or 123L.

110. Life Science for Non-Majors. (3) Degenhardt
Fundamental concepts of biology. Social implications are stressed, chemical and molecular aspects are deemphasized. 3 lectures. {Fall}

111. Life Science for Non-Majors. (3) Degenhardt
Continuation of Biology 110. Emphasis on ecology and man's integral relationship with and responsibility to his environment. Prerequisite: 110. 3 lectures. {Spring}

121L. Principles of Biology. (4) Altenbach, Toolson
Impact biology, molecular basis of life, animal behavior, reproductive biology of plants and animals. Emphasis on development of concepts in addition to descriptive aspects. 3 lectures, 3 hrs. lab. {Summer, Fall, Spring}

122L. Principles of Biology. (4) Altenbach, Toolson
Comparative animal and plant physiology, emphasizing the role of physiology in adaptation of organisms to their environment. 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 Colleges of Nursing and Pharmacy. 3 lectures, 3 hrs. lab. {Spring}

136. Human Anatomy and Physiology. (3) Staff
The structure and functions of the human body. Lectures emphasize physiology. May be taken with, or independently of, 139L. Not accepted toward a biology major. {Fall, Spring}

139L. Human Anatomy and Physiology Laboratory. (1) Staff
Laboratory work in elementary anatomy and physiology. Cannot be taken independently of 136. 3 hrs. lab. {Fall, Spring}

221. [408] **Introductory Genetics.** [Genetics] (3) W. Johnson
Structure, function, and transmission of hereditary factors. May be taken with or independently of Biol 223L. Prerequisites: 121L and 122L. {Fall, Spring}

222. Evolution and Ecology. (3) Cates, Molles, Thornhill
Evolutionary processes; population, community, and ecosystem ecology. Prerequisite: 221. 3 hrs. lecture. {Fall, Spring}

223L. [409L] **Introductory Genetics Laboratory.** [Genetics Laboratory] (1) W. Johnson
Genetic principles using the fruit fly and lower organisms. Pre- or corequisite: 221. 3 hrs. lab. {Fall, Spring}

237. [237L] **Human Anatomy and Physiology for Health Sciences I.** [Human Anatomy and Physiology for Health Sciences] (3) Bourne, Bruner
An integrated study of human structure and functions of the skeletal, muscular, nervous, and cardiovascular systems. Enrollment restricted to students of the Colleges of Pharmacy and Nursing. Not accepted for biology major. Prerequisites: Biol 123L and Gen Chem 4 hrs. Corequisite: 247L. 3 hrs. lecture. {Fall}

238. [238L] **Human Anatomy and Physiology for Health Sciences II.** [Human Anatomy and Physiology for Health Sciences] (3) Bourne, Bruner
Continuation of Biol 237. Cardiovascular, respiratory, digestive, excretory, reproductive, and endocrine systems. Corequisite: 248L. 3 hrs. lecture. {Spring}

239L. [253 and 254L] **Microbiology for the Health Sciences.** [Introductory Microbiology and Introductory Microbiology Lab for Health Sciences] (4) Baca
Introduction to microbiology with emphasis on principles of infection and immunity. Prerequisites: 121L or 123L and 4 hours of chemistry with Chem 100L not accepted. Not accepted toward a biology major. 2 lectures, 4 hrs. lab. {Fall}

247L. Human Anatomy and Physiology Laboratory for Health Sciences 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 for Health Sciences 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; and plant adaptations. Prerequisites: 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. {Spring}

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 324.) {Spring}

350L. [253 and 255L] **General Microbiology.** [Introductory Microbiology and Introductory Microbiology Lab] (5) Barton, Caldwell
Anatomy, physiology, and ecology of microorganisms. Principles of bacterial techniques, host-parasite relationships, and infection and immunity. Prerequisites: 221 and Chem 301; corequisite: Chem 302. 3 lectures, 6 hrs. lab. {Summer, 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}

***371L. Biology of the Invertebrates.** (4) Staff
Survey of the major invertebrate groups with emphasis on evolutionary and ecological relationships, and the correlation of structure with function. Prerequisite: 222. 3 lectures, 3 hrs. lab. {Spring 1979}

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. {Fall}

***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 Seminar. (1-3) Staff
(Cannot be repeated for credit.) {Offered upon demand}

***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}

***406. Insect Ecology.** (3) Taylor
Physiology and behavior of insects as adaptations to their environments. Prerequisite: 222. {Fall 1977, Spring 1979}

***410L. Arid Land Invertebrates.** (4) Crawford
Biology of arid land invertebrates with emphasis on their roles in adaptations to xeric ecosystems. Some Saturday field trips required. Prerequisites: 371L, 414L; 423 and 424 recommended. 3 lectures, 3 hrs. lab. {Offered upon demand}

411L. Population Biology. (4) Taylor
Evolutionary mechanics; population and evolutionary ecology. Prerequisites: 222 and Math 162 or 180-181. 3 lectures, 3 hrs. lab. {Fall}

***412L. Descriptive and Comparative 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. {Offered upon demand}

***416L. Histology.** (5) Bourne
Microscopic structure of vertebrate tissues, emphasizing correlation of structure and function. Prerequisite: 221. 3 lectures, 4 hrs. lab. {Spring}

***420. Biochemistry of the Nervous System.** (3) LeBaron, Wild
(See Med Sci 420.)

***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 animals to light. Prerequisites: 222 and junior status. {Fall}

***424. Biological Adaptation.** (3) Staff
Adaptations of plants and animals to temperature and water. Prerequisites: 222 and junior status. {Spring}

***425. Molecular Genetics.** (3) Kogoma
Molecular biology of the gene. May be taken with or independently of 426L. Prerequisite: 351 or permission of instructor. {Spring}

***426L. Molecular Genetics Laboratory.** (1) Kogoma
Experiments with bacteria and bacteriophages to understand mutation, recombination, complementation, etc. Pre- or corequisite: 425. 3 hrs. lab. {Spring 1978}

***427.** [*509] **Advanced Genetics.** (3) W. Johnson
Detailed consideration of selected genetic topics. Prerequisite: 221. {Spring 1979}

***428. Human Heredity.** (3) W. Johnson
Genetic principles applied to man. Prerequisite: 221. {Fall}

***429. Cellular Physiology and Biochemistry.** (4) Kerkof
Life processes with emphasis on relationships of structure and function at organelle and molecular level. Prerequisites: 14 hrs. Biol and Chem 212 or 301-303L. 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. Biol and Biol 429, Chem 324 or Chem 481-482. {Spring}

***431L. Vertebrate Physiology Laboratory.** (1) Riedesel
Independent research project in small student groups with demonstration of competence in operation of equipment and data interpretation. Pre- or corequisites: 430 and permission of instructor. 3 hrs. lab. {Fall, Spring}

***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 RNA. {Offered upon demand}

***439L. Methods in Cell Biology.** (3) Kerkof
Familiarization of students with main interests in cellular and molecular biology with current laboratory methods and techniques. Pre- or corequisites: 429 and permission of instructor. 1 lecture, 5 hrs. lab. {Spring 1979}

***440L.** [540L] **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-132L. {Offered upon demand}

***443L. Comparative Physiology.** (4) Staff
A comparison of physiological processes with emphasis on osmoregulation, nutrition, and metabolism. Prerequisites: 371L or 386L, 430 or 478L and 429, or permission of instructor. 3 lectures, 3 hrs. lab.

***451. Microbial Ecology.** (3) Caldwell
Relationships between physiology, morphology, and natural distribution in free-living, symbiotic, and pathogenic microorganisms. Prerequisite: Chem 324 or 281. 3 lectures. {Fall}

***452L. Environmental Microbiology.** (4) Caldwell
Field and laboratory studies of free-living microorganisms, emphasizing determination of distribution and physiological activity in natural environments. Prerequisites or corequisites: 451. 1 lecture, 9 hrs. lab. (Saturday). {Fall}

***454L. Pathogenic Bacteriology.** (5) Baca
The properties and characteristics of disease-producing bacteria and their relationship to disease. Prerequisite: 350L; Biol 456 recommended. 2 lectures, 6 hrs. lab. {Spring}

***455. Ethology: Animal Behavior.** (3) Ligon, Thornhill
A survey of behavior patterns in animals, with emphasis on adaptive significance. Prerequisite: 222. {Spring}

***456. Immunology.** (3) Staff
Principles of antigen-antibody reaction, hypersensitivity, and auto-immune diseases. Laboratory preparation, detection, and measurement of antibodies. Prerequisites: 350L and Chem 302-304L; Chem 324 recommended. 2 lectures, 6 hrs. lab {Offered upon demand}

***457L. Ethology Laboratory: Animal Behavior.** (1) Ligon, Thornhill
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 antibodies. Pre- or corequisite: 456. 4 hrs. lab {Offered upon demand}

***460L. Physiology of Bacteria.** (2-4) Barton, Caldwell
Cytology; growth and reproduction, fermentation, respiration, and other enzymatic activities of bacteria. Prerequisite: 350L. 2 lectures (2 cr.) or 2 lectures and 6 hrs. lab (4 cr.). {Spring}

***466. Evolutionary and Behavioral Ecology.** (3) Ligon, Thornhill
Evolutionary fact and theory; the ecology and evolution of animal behavior. Corequisite: 222. {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. {Fall}

***470L. Ecology of Flowing Waters.** (4) Molles
Biological, physical, and chemical interactions in rivers, streams, and spring runs. Prerequisites: 222, Physcs 151, 152, and 8 hrs. of Chem. 3 lectures, 3 hrs. lab. {Fall 1977 and alternate years}

***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. {Fall 1978}

***474L. Plant Anatomy.** (4) Martin
Structure of vascular plants. Prerequisite: 222. 2 lectures, 4 hrs. lab. {Spring 1979}

***475L. Pharmacology I.** (5)
(See Pharm 475.) Not allowed for undergraduate biology credit. {Fall}

***476L. Pharmacology II.** (4)
(See Pharm 476.) Not allowed for undergraduate biology credit. {Spring}

***478L. Plant Physiology.** (4) G. Johnson
Nutrition, metabolism, and growth of higher plants. Prerequisite: 260L or permission of instructor; Chem 301-303L recommended. 3 lectures, 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}

***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 1978}

***487L. Ichthyology.** (4) Molles
Taxonomy, phylogeny, physiology, and ecology of fishes. All-day field trips and one or more overnight field trips required. Prerequisite: 222. 3 lectures, 3 hrs. lab. {Fall 1978}

***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
Classification, phylogeny, natural history, and literature of mammals. All-day field trips and one or more overnight field trips required. Prerequisites: 386L, 421L. 3 lectures, 3 hrs. lab. {Spring 1979}

*491L. **Radiobiology.** (4) G. Johnson
Properties of radiation; principles, theory, and use of detection and counting instruments; radioisotopes as tracers in biological experiments. Prerequisites: 429, Physcs 151-153L; one year of organic chemistry recommended. 2 lectures, 6 hrs. lab. {Fall 1977}

*492. **Radiobiology.** (3) Kerkof
Interaction of radiation with matter; biological effects of radiation; radiation syndrome; relative radiosensitivity of cells, organs, and organisms; physics and pracical applications of radiation. Prerequisite: 491L; pre- or corequisite: Physcs 152-154L; 1 year of organic chemistry recommended. {Spring 1978}

*493L. **Advanced Radiobiology Laboratory.** (1-3) G. Johnson
Advanced radioisotope methodology, independent research in radiobiology. Corequisites: Biol 492 and permission of instructor. {Spring 1978}

*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 1978}

*495. **Topics in Limnology-Oceanography.** (3) Molles
Biological, physical, and chemical interactions in standing water ecosystems. Prerequisites: 222, 1 year of physics and chemistry. {Spring}

*496L. **Limnology-Oceanography Technique.** (1) Molles
Measurements of physical, chemical, and biological variables used in both freshwater and marine research. Pre- or corequisite: 495. {Spring}

499. **Undergraduate Problems.** (1-3)
Permission of instructor required. Maximum of 6 hrs. credited toward a biology major or minor.

*500. **New Graduate Student Seminar.** (1) Duszynski

*501. **Seminar: Current Topics in Biology.** (1)‡
Prerequisite: permission of instructor. {Summer, Fall, Spring}

*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 1977}

*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}

*525. **Current Concepts of Biology.** (3) Duzynski
{Offered upon demand}

*551. **Problems.** (2-3)††

*552L. **Advanced Parasitic Protozoology.** (4) Duszynski
Prerequisites: 371L, 416L, or permission of instructor. 2 lectures, 4 hrs. lab. {Spring 1978}

*554L. **Mammalian Ecology.** [Advanced Mammalogy] (4) Findley
Prerequisite: 489L. 3 lectures, 3 hrs. lab. {Offered upon demand}

*557. **Theoretical Ecology.** (3) Taylor
Prerequisites: 411L and Math 163 or equivalent. 3 lectures. {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: Biol 483.

*571L. **Physiological Plant Ecology.** (4) Gosz
Prerequisite: 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 1978}

*583. **Biology of Water Pollution.** (3) Kidd
Prerequisite: permission of instructor. {Offered upon demand}

*584L. **Biology of Water Pollution Laboratory.** (1) Kidd
Enrollment limited to ten. Pre- or corequisites: 583 and permission of instructor. {Offered upon demand}

*593L. **Plant Mineral and Water Relations.** (4) G. Johnson
Prerequisite: 478L. 2 lectures, 6 hrs. lab. {Fall 1978}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*651F. **Advanced Field Biology.** (4-8)
Approval of Committee on Studies required.

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

BUSINESS AND ADMINISTRATIVE SCIENCES

PROFESSORS R. R. Rehder, Ph.D. (Dean); E. H. Caplan, Ph.D.; H. V. Finston, Ph.D.; W. H. Huber, J.D.; R. A. Lenberg, Ph.D.; P. T. Mori, J.D.; W. S. Peters, Ph.D.; H. R. Radosevich, Ph.D.; D. M. Slate, Ph.D.; L. G. Winter, Ph.D.; ASSOCIATE PROFESSORS J. D. Champoux, Ph.D.; K. Christman, M.B.A.; P. C. Elliott, Ph.D.; R. H. Jehenson, Ph.D.; R. C. Moyer, Ph.D.; R. A. Reid, Ph.D.; D. G. Simonson, Ph.D.; J. A. Yeakel, Ph.D.; L. B. Zink, Ph.D.; ASSISTANT PROFESSORS D. K. Clancy, Ph.D.; F. Collins, Ph.D.; R. J. Lievano, Ph.D.; F. F. Newpeck, Ph.D.; A. M. Parkman, Ph.D.; J. L. Porter, J.D.; S. Raveed, D.B.A.; LECTURERS M. Q. Anderson, D.B.A. (expected 1977); P. J. Hall, Ph.D.; (expected 1977); H. M. Hayes, Ph.D.; (expected 1977); J. Perovich, M.B.A.

CURRICULA

See pp. 39-40.

MINOR STUDY

The minor in business consists of the following: B&AS 100, 202, 358 or 359, 361, Econ 201, and 202 (a total of 18 credit hours). (B&AS 202 has prerequisites of two semesters of college-level mathematics and one semester of economics, with a grade of C or better in each course.)

100. **Management: An Introduction.** (3)
Modern concepts of organizations and their management. An overview of functional activities within business and other organizations. {Fall, Spring}

201. **Secretarial Accounting.** (3)
Beginning course in accounting open only to two-year Secretarial Certificate, A.A. in Secretarial Studies and Office Supervision, and business education students. Credit **not** applicable to B.B.A. degree in the Anderson School of Business and Administrative Sciences. {Fall, Spring}

202. **Introduction to Accounting.** (3)
An examination of the conceptual framework of accounting and the functions of accounting in a business-oriented society. Topics include valuation theory and its application to assets and liabilities, concepts of business income, funds-flow analysis, problems of financial reporting. Prerequisites: two semesters of college-level mathematics and one semester of economics with a grade of C or better in each course. {Fall, Spring}

290L. **Business Statistics Laboratory.** (1)
Application of probability and statistics to administrative problems and processes. Corequisite: Math 102. {Fall, Spring}

NOTE: With the exceptions noted immediately below, the minimum prerequisites for all 300- and 400-level courses listed 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 students not working toward a B.B.A. degree and may not be used to fulfill the requirements for that degree.

300. **Management Science I.** (3)
A survey of various mathematical and statistical models which have successfully aided managerial decision-making. Major emphasis is directed toward formulation of problems and interpretation of results for Bayesian Decision Theory and Linear Programming. Students will be introduced to forecasting techniques, inventory control, waiting-line problems, network analysis (PERT-CPM), Markov processes, and simulation modeling techniques. Prerequisites: "specific requirements," see above. {Fall, Spring}

301. Management Science II. (3)
Continuation of management science models and introduction to computer-based management information systems. Prerequisite: 300. {Fall, Spring}

303. 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}

306. Organizational Behavior I—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}

307. Organizational Behavior II—Applications. (3)
Continuation of 306 with emphasis on applications of theories and concepts. Prerequisite: 306. {Fall, Spring}

308. Organizational Environment. (3)
The influence of environmental change on the structure and operation of the organization. Social, political, economic, ethical, 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}

309. 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. 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. 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. Prerequisites: Econ 200 and 201. {Fall, Spring, Summer}

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. Prerequisites: 300, 303 or 340, Econ 300, Econ 315. {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 noncurrent 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. (3)**
Federal and state income tax laws and regulations, sources of tax law; tax services; the Internal Revenue Service; tax returns, rates, and credits; deductions and exclusions; withholding provisions, capital gains and losses; community property clauses. Prerequisites: "specific requirements," see above, and 340 or permission of the instructor. {Fall, Spring}

***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 accepted as credit toward a 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 accepted as credit toward a 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 accepted as 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. (May be waived with permission of the Director of Student Affairs.) 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, 449, or 534. {Fall}

436. Production and Operations Management. (3)
The design, implementation, and control of model-based systems to assist in the management of production and operations systems in various types of organizations. Facility design, production planning and scheduling, quality control, and other techniques. Case analyses of management science techniques applied to production and operations problems. Prerequisites: 300 and 301 or equivalent. {Fall, Spring}

439. Operations Analysis and Decision Models. [Projects in Management Science] **(3)**
Seminar in the application of management science techniques. Mathematical programming, statistical decision theory, and additional topics according to class and instructor interests. Case studies, class or group projects. Prerequisites: 300 and 301 or equivalent or permission of the 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}

***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 hours each semester)††
Special permission of the adviser and of the Dean of the School of Business and Administrative Sciences required. Arrangements must be made with individual instructor before enrolling for Problems. {Fall, Spring}

***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: 449 or consent of instructor. {Spring}

***464. Labor Arbitration and Collective Bargaining.** [Labor Law and Collective Bargaining] **(3)**
Intensive analysis of negotiation and arbitration cases involving wages, employee discipline, seniority rights, management prerogatives, and other collective bargaining issues. {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: B average or higher in 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, 307. {Spring}

470. Financial Markets and Institutions. [Money Management and Financial 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. [Problems and Policies in Business 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}

***480. Marketing Research and Information Systems.** [Marketing Research] **(3)**
Research methods and techniques as an aid to marketing management and the application of these tools to the process of decision-making and strategic and tactical planning in marketing. Prerequisite: 322. {Fall}

***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. Prerequisite: 322. {Spring}

***484. Sales and Purchasing Management. (3)**
Focuses on major managerial decision areas in the management of both sales and procurement (including professional retail buying and governmental and industrial purchasing). Within various institutions emphasizes: (a) how customers buy and the systems required to satisfy their needs, and (b) how suppliers sell and systems required to service their needs. Prerequisite: 322. {Fall}

***485. International Management.** [Introduction to International Business] **(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}

***486. Distribution and Marketing Institutions.** [Marketing Logistics] **(3)**
Analysis and development of integrated distribution networks for marketing to various institutions. Applies system approach to decision-making in management of wholesaling, retailing, and physical distribution (including transportation logistics, warehousing, inventory, and environmental problems). Prerequisite: 322. {Spring}

***487. Management of Advertising and Promotion Systems.** [Marketing Communication] **(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 Business and Administrative Sciences. (3)
Selected offerings of business and administrative science 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 B&AS core courses or permission of the instructor. {Fall, Spring}

***500. Quantitative Analysis I. (3)**
{Fall, Spring}

***501. 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)**
Prerequisite: 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. Computer Programming. (1)**
{Fall, Spring}

***520. Operations Research and Production Management. (3)**
Prerequisites: 501, 502, 504, 506, 509, 510. {Fall, Spring}

***522. Marketing Management. (3)**
Prerequisite: 504. {Fall, Spring, Summer}

***526. Financial Management. (3)**
Prerequisites: 500, 502, 504, 506, 509, 510; corequisite: 503. {Fall, Spring}

***528. International Management.** [Fundamentals of International Business] **(3)**
Prerequisite: 504. {Fall, Spring, Summer}

***530. Applied General Systems Theory.** [Systems Theory and Information Science] **(3)**
Prerequisite: 520 or permission of the instructor. {Spring}

***531. Multivariate Analysis for Administrative Science. (3)**
Prerequisite: 501. {Spring}

***532. Simulation. (3)**

(Also offered as Cp Sci 452.) Prerequisite or corequisite: 520. {Fall, Spring}

*533. **Quantitative Analysis for System Planning.** (3)
Prerequisites: 501, 502, 504, 506, 509, 510. {Fall}

*534. **Introduction to Information Systems.** (3)
Prerequisites: 500, 501, 502, 504, 506, 509, 510. {Fall}

*535. **Information System Analysis.** (3)
Prerequisites: 500, 501, 502, 504, 506, 509, 510. {Spring}

*536. **Quantitative Methods in Health Systems Management.** (3)
Prerequisites: 501, 520, 591, or equivalent. {Fall}

*540. **Financial Accounting.** (3)
Prerequisites: 502, 503. (503 may be taken concurrently.) {Fall}

*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)
{Spring} Prerequisite: 346 or equivalent.

*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}

*550. **Economic and Behavioral Theories of the Organization.** (3)
Prerequisites: 500, 504, 506, 510. {Spring in alternate years}

*551-552. **Problems.** (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}

*556. **Experimental Economics.** (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. **Seminar in Organizational Ecology.** (3)
Prerequisite: 508. {Spring}

*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.**
(See Sp Comm 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.** [Seminar in Marketing Strategy] (3)
Prerequisite: 522. {Fall 1978 and alternate years}

*582. **Management of Distribution and Channel Systems.** [Seminar in Marketing Models.] (3)
Prerequisite: 522. {Fall}

*583. **Comparative Marketing Systems.** [Seminar in Comparative Marketing Systems] (3)
Prerequisite: 522. {Fall}

*584. **Management of Sales and Procurement Systems.** [Advanced Seminar in Marketing Theory] (3)
Prerequisite: 522. {Spring}

*585. **Strategic Intelligence: Domestic and International.** [Organizational Intelligence: Domestic and International] (3)
Prerequisites: 522 and 528 or instructor's permission. {Fall 1978 and alternate years}

*586. **Management of International Operations.** [Seminar in the Management of International Business Operations] (3)
Prerequisite: 528. {Fall 1977 and alternate years}

*588. **International Management Seminar.** [International Transferability of Management Skills] (3)
Prerequisite: 528. {Spring}

*589. **Strategic Management Planning: Domestic and International.** (3)
Prerequisites: 522, 528 or instructor's permission. {Fall 1977 and alternate years}

*590. **Problems for Interns.** (1-6)

*591. **Introduction to Health and Health Care Organizations.** [Seminar in Integrative Management] (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}

*595. **Seminar in Corporation and Society.** (3)
Prerequisites: 500, 502, 504, 506, 509, 510. {Offered upon demand}

*598. **Seminar in General Management.** [Seminar in Integrative 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. (Thesis)** (1-6)

*651-652. **Doctoral Problems.** (1-3 per semester)

*699. **Dissertation.** (1-9 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.** [Marketing and International Business] (3)

*722. **Marketing and International Business.** [Operations Management] (3)

*726. **Financial Management.** (3)

*751. **Practicum.** (3)

*798. **Integrative Seminar.** (3)

BUSINESS EDUCATION

See Education, Secondary.

CHEMICAL ENGINEERING

See Engineering, Chemical.

CHEMISTRY

PROFESSORS G. H. Daub, Ph.D. (Chairperson); R. D. Caton, Ph.D.; U. Hollstein, Ph.D.; M. Kahn, Ph.D.; ASSOCIATE PROFESSORS F. S. Allen, Ph.D.; W. F. Coleman, Ph.D.; W. M. Litchman, Ph.D.; D. R.

McLaughlin, Ph.D.; E. P. Papadopoulos, Ph.D.; R. E. Tapscott, Ph.D.; D. L. VanderJagt, Ph.D.; E. A. Walters, Ph.D.; ASSISTANT PROFESSORS C. F. Campana, Ph.D.; R. W. Holder, Ph.D.; T. E. Jones, Ph.D.; C. J. Morrow, Ph.D.; T. M. Niemczyk, Ph.D.; R. T. Paine, Ph.D.; S-M Park, Ph.D.; INSTRUCTORS L. Deck, M.S.; M. P. Malm, M.S.

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. 118.

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 324-496 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 Physcs 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 324-498; 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 324-498. The program must also include Physcs 160, 161, 163L, 262, 264L, mathematics equivalent to 265. Only three credits of Chem 495-498 and two credits of 325-326 may be counted toward the B.A. or B.S. degree.

Two years of German is recommended for students who are planning to do advanced studies in chemistry.

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 [121L-122L] (or 121L-122L [101L-102L], 253L), 307-308 (or 301-302), 309L, 310L (or 303L, 304L, 415L), 311, 312, 331L, 332L, 351, 431, and 7 hours of additional courses from 324-498, 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 American Chemical Society graduate entrance exams in their senior year and must obtain an average score above the fiftieth percentile.

Students deciding on a B.S. after having taken Chem 303L-304L may qualify for the B.S. by taking Chem 415L, 2 hours of this course counting toward the 7 additional hours required selected from courses numbered 324-498.

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 324-496. Chem 307, 308, 309L, and 310L may be substituted for Chem 301, 302, 303L, and 304L in which case the minor will total 22 hours. Chem 111L and 112 do not count toward the minor.

102L. [100L] **Chemistry for the Citizen. (4)**
Nonquantitative and descriptive introduction to the worldview of the chemist with applications to problems at the science-society interface, such as, the energy crisis, air and water pollution, nuclear chemistry, etc. 3 lectures, 3 hrs. lab. {Spring}

111L. [141L] **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).** {Fall, Spring}

121L. [101L] **General Chemistry. (4)**
Introduction to the chemical and physical behavior of matter. Prerequisite: grade of C or better in Math 020 or a math placement index high enough to exempt student from Math 020. 3 lectures, 3 hrs. lab. {Fall, Summer}

122L. [102L] **General Chemistry. (4)**
Continuation of 121L. Prerequisite: 121L or 131L with grade of C or better. 3 lectures, 3 hrs. lab. {Spring, Summer}

131L. [121L] **Honors General Chemistry.** [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. [122L] **Honors General Chemistry.** [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 corequsiite: Math 163 or 181. 3 lectures, 6 hrs. lab. **(Credit not allowed for both 122L and 132L or 253L).** {Spring}

212. [281] **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}

214L. [282L] **Integrated Organic and Biological Chemistry Laboratory. (1)**
Introduction to basic laboratory techniques in organic chemistry with some representative reactions. Identification tests of biochemical substances and related lab techniques. Prerequisite or corequisite: 212. 3 hrs. lab. {Offered upon demand}

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 253 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. {Fall, Summer}

****302. Organic Chemistry. (3)**
Continuation of 301. Prerequisite: 301. {Spring, Summer}

****303L. Organic Chemistry Laboratory. (1)**
To be taken concurrently with 301 or 307. 3 hrs. lab. {Fall, Summer}

****304L. Organic Chemistry Laboratory. (1)**
To be taken concurrently with 302 or 308. 3 hrs. lab. {Spring, Summer}

****307. Honors Organic Chemistry. (3)**
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 [101L-102L] or 131L-132L [121L-122L]. It is mandatory that 303L or 309L be taken concurrently. {Fall}

****308. Honors Organic Chemistry. (3)**
Continuation of 307. Prerequisite: 307. It is mandatory that 304L or 310L be taken concurrently. {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, Physcs 151 or 161; corequisite: Physcs 152 or 262. {Fall}

****312. Physical Chemistry. (4)**
Continuation of 311. Prerequisite: 311. {Spring}

****315. Introductory Physical Chemistry. (4)**
One-semester survey of the fundamentals of physical chemistry with primary emphasis upon biological and biochemical applica-

tions. 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. in chemistry.) **(Credit not allowed for both 311 and 315.)** {Fall}

****324. Biochemistry. (3)**
Introduction 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. Intended for undergraduate students and especially recommended for pre-med students. Prerequisite: 302 or 307. **(Credit not allowed for both 324 and 481.)** {Spring}

****325-326. Special Topics for Undergraduates. (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 chemistry engineers. Continuation of 331L. Prerequisite: 331L; corequisite: 312. 6 hrs. lab. {Spring}

****342. Inorganic Chemistry. (2)**
The chemical and physical properties of the elements and their compounds including periodic trends, solid state structures, nonmetallic compounds, and transition metal complexes. Prerequisite: 311 or 315 or permission of instructor. Students who take 342 and subsequently take 431 will lose credit for 342. {Spring}

****344L. Inorganic Chemistry Laboratory. (1)**
The synthesis and characterization of inorganic compounds of the metals and nonmetals. Introduction to the laboratory techniques of inorganic chemistry. Pre- or corequisite: 342 or 431. 3 hrs. lab. {Offered upon demand}

****351. Advanced Quantitative Analysis. (3)**
Lecture survey of theory and practice of modern chemical analysis. Ionic equilibria, columnar separation theory, and introduction to instrumental and electroanalytical methods. Prerequisite: 132L or 253L; corequisite: 311. {Fall}

****391-392. Readings in Selected Topics. (1-3)‡**
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}

***411.** [412] **Spectra of Organic Molecules. (2)**
A survey of the basic principles of ultraviolet, infrared, nuclear magnetic resonance, and mass spectrometry as applied to the identification of organic compounds. Prerequisite: 302 or 308. {Fall upon demand}

***412. Synthetic Organic Chemistry. (2)**
A survey of the principal reactions useful for organic syntheses. Prerequisite: 302 or 308. {Spring upon demand}

***414. Mechanistic Organic Chemistry. (2)**
A survey of mechanisms of organic reactions with emphasis on reactivity patterns and stereochemical outcome. Prerequisite: 302 or 308. {Spring upon demand}

***416L.** [415L] **Qualitative Organic Analysis. (4)**
Identification of carbon compounds through the characteristic reactions and spectral behavior of the functional groups. Prerequisites: 132L or 253L, 302 or 308, 304L or 310L, and permission of instructor. 2 lectures, 6 hrs. lab. {Spring}

***431. Advanced Inorganic Chemistry. (3)**
Survey of electronic and molecular structures of inorganic compounds, coordination chemistry, bonding theory, physical methods, periodicity, and reactions. Prerequisite: 312 or permission of instructor. {Fall}

***432. Advanced Inorganic Chemistry. (3)**
Continuation of 431. Prerequisite: 431. {Spring}

***433. Chemical Applications of Group Theory.** [Molecular Biophysics] **(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}

***436. Spectroscopy. (3)**
Treatment of general spectroscopic principles and techniques as applied to molecular structure determination. Prerequisite: 312 or permission of instructor. {Spring upon demand}

***454L. Instrumental Analysis. (4)**
Instrumentation and applications of instrumental methods to chemical analysis, including spectrophotometric, electroanalytical, X-ray diffraction, neutron activation, and chromatographic methods. Prerequisite: 351 or permission of instructor. 2 lectures, 6 hrs. lab. {Spring}

***455. Modern Aspects of Chemical Analysis.** [Advanced 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}

***481. Biological Chemistry. (3)**
(Also offered as Med Sc 481.) In-depth survey of basic biochemical reactions within the cell with quantitative evaluation of the energy changes involved. Topics considered include structure and function of macromolecules, pH control, catabolic metabolism, free energy changes, enzyme kinetics, control mechanisms, and bioenergetics. Intended for students expecting to pursue advanced studies in biochemistry. **(Credit not allowed for both 324 and 481.)** Prerequisite: 302 or 308; pre- or corequisite: 311 or 315; undergraduates—approval of instructor. {Fall}

***482. Biological Chemistry. (3)**
(Also offered as Med Sc 482.) Continuation of 481 with major emphasis on anabolic metabolism and control mechanisms. Prerequisite: 481. {Spring}

***483L. Biological Chemistry Laboratory. (1)**
Pre- or corequisite: 481. 3 hrs. lab. {Offered upon demand}

***484L. Biological Chemistry Laboratory. (1)**
Pre- or corequisite: 482. 3 hrs. lab. {Offered upon demand}

495-496. Undergraduate Problems. (1-3 hrs. each semester)
Prerequisite: permission of instructor. {495—Summer, Fall; 496—Spring}

497-498. Senior Honors Research. (1-3 hrs. each semester)
Prerequisite: permission of instructor. Senior paper based on independent research. {497—Summer, Fall; 498—Spring}

***501. 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.** [Chemistry of Heterocyclic Compounds] **(3)**
{Fall 1978 and alternate years}

***514. Synthesis in Organic Chemistry. (3)‡**
Prerequisite: 511 or permission of instructor. {Spring}

***515-516. Topics in Organic Chemistry. (1-3)‡**
{515—Fall upon demand; 516—Spring upon demand}

***521. Radiochemistry. (3)**
Prerequisite: 312 {Fall 1978 and alternate years}

***522. Advanced Topics in Radiochemistry. (3)**
Prerequisite: permission of instructor. {Spring 1979 and alternate years}

***524L. Crystal Structure Analysis. (4)**
Prerequisite: permission of instructor. 3 lectures, 3 hrs. lab. {Spring}

***525-526. Special Topics in Chemistry. (1)‡**
Prerequisite: permission of instructor. {525—Fall upon demand; 526—Spring upon demand}

***531.** [532] **Inorganic Stereochemistry. (3)**
Prerequisite: 431 or permission of instructor. {Fall 1978 and alternate years}

***533. Inorganic Bonding Theory.** [Group Theory] **(3)**
Prerequisite: 431 or permission of instructor. {Fall 1977 and alternate years}

***534. Advanced Coordination Chemistry. (3)**
Prerequisite: 431 or permission of instructor. {Spring 1978 and alternate years}

***535. Bioinorganic Chemistry. (3)**
Prerequisite: 431 or permission of instructor. {Fall 1977 and alternate years}

***536. Inorganic Reaction Mechanisms. (3)**
Prerequisite: 431 or permission of instructor. {Spring 1979 and alternate years}

***537-538. Special Topics in Inorganic Chemistry. (1-3)‡**
Prerequisite: permission of instructor. {537—Fall upon demand; 538—Spring upon demand}

***540. Advanced Analytical Chemistry. (3)**
{Spring}

***541. Separations. (3)**
{Fall 1978 and alternate years}

***542. Chemical Measurements. (3)**
{Spring 1979 and alternate years}

***543. Analytical Spectroscopy. (3)**
{Fall 1977 and alternate years}

***544. Electrochemistry. (3)**
{Spring 1978 and alternate years}

***545-546. Topics in Analytical Chemistry. (1-3)‡**
{545—Fall upon demand; 546—Spring upon demand}

***560. Biophysical Chemistry. (3)**
Prerequisites: 312 or 315 and 482 or permission of instructor. {Spring}

***561. Quantum Chemistry I. (3)**
{Fall 1978 and alternate years}

***562. Quantum Chemistry II. (3)**
Prerequisite: 561. {Spring 1979 and alternate years}

***563. Thermodynamics. (3)**
Prerequisite: 312 or permission of instructor. {Fall 1978 and alternate years}

***564. Statistical Thermodynamics. (3)**
Prerequisite: 312 or permission of instructor. {Spring 1979 and alternate years}

***565. Kinetics. (3)**
Prerequisite: 312 or permission of instructor. {Fall 1977 and alternate years}

***566. Spectroscopy. (3)**
Prerequisite: 312 or 561 or permission of instructor. {Spring 1978 and alternate years}

***567-568. Topics in Physical Chemistry. (1-3)‡**
Prerequisite: permission of instructor. {567—Fall upon demand; 568—Spring upon demand}

***581. Advanced Topics in Biological Chemistry. (1-3)‡**
(Also offered as Med Sc 581.) Prerequisite: 482. {Offered upon demand}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

***623. Biochemistry of Steroids. (3)**
(Also offered as Med Sc 623.) Prerequisites: 302 or 308, 324 or 481, or Med Sc 590-591. {Fall 1978 and alternate years}

***625. Chemistry Seminar. (1)**
{Fall, Spring}

***650. Research. (2-6, to a maximum of 12)**
{Summer, Fall, Spring}

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

CHICANO STUDIES

COORDINATOR: Antonio Mondragon, Lecturer in American Studies; ASSISTANT COORDINATOR: Tobias Duran, M.A., Lecturer in American Studies.

This interdepartmental program is designed to inject the richness of the Chicano viewpoint and culture into the already existing departments. In order to eradicate the historical and political biases which have existed vis-a-vis the Chicano values, language, and way of life, this program offers approximately fifteen courses, which are accredited and numbered by the corresponding departments. The following are some of the core courses:

CURRICULUM

Am St 301. Interdepartmental Studies in the Culture of the United States. (3)
Chicano literature.

Am St 302. Interdepartmental Studies in the Culture of the United States. (3)
History of conflict in New Mexico.

Hist 283. La Raza: A History of Mexican Americans. (3)

Phil 105. Introduction of Chicano Thought. (3)

Soc 226. Sociology of the Barrio. (3)

CIVIL ENGINEERING

See Engineering, Civil.

CLASSICAL LANGUAGES

See Modern and Classical Languages.

CLASSICS

See Modern and Classical Languages.

COMMUNICATIVE DISORDERS

PROFESSORS L. E. Lamb, Ph.D. (Chairperson); F. M. Chreist, Ph.D.; ASSOCIATE PROFESSORS D. S. Butt, Ph.D.; R. B. Hood, Ph.D.; B. E. Porch, Ph.D. (part-time); ADJUNCT ASSOCIATE PROFESSORS K. W. Hattler, Ph.D.; M. E. McClellan, Ph.D.; ASSISTANT PROFESSORS J. T. Lybolt, Ph.D.; W. E. Swisher, Ph.D.; ADJUNCT ASSISTANT PROFESSOR M. A. Crum, Ph.D.; INSTRUCTORS M. L. Bolton, M.A.; P. S. Fletcher, M.S. (part-time); M. S. Smith, M.S.; L. Weir, M.A.; J. Williams, M.A.; ADJUNCT INSTRUCTOR E. E. Haecker, M.A.

MAJOR STUDY

Thirty-six hours in communicative disorders. Required: 280, 302, 303, 320, 321. Electives: 21 hours from 325, 326L, 330, 350, 358, 422, 425, 426, 427, 429, 430, 435, 436, 437, 438L, 440, 450, 458, 492, 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.

105. Speech for Foreign Language Students. (1 hr. per semester, to a maximum of 3) Chreist
Clinical work for students who speak English with a foreign accent. {Summer, Fall, Spring}

§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.) Bolton, Butt, Chreist, Hood, Lamb
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) Chreist
(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. {Fall, Spring}

292L. [292] **Introduction to Linguistics.** [Introduction to the Study of Language] **(3-4)**
(See Ling 292L.)

§Offered at the Gallup Branch.

*302. **Communicative Disorders.** (3) Bolton, Butt, Chreist
(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. {Spring, Fall, Summer}

*303. **Phonetics.** (3) Chreist
(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 of Speech and Hearing.** (3) Swisher
Principles and processes of sound generation, transmission, and reception 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) Lybolt
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) Lybolt
Projects and demonstrations in support of theory presented in 325. Pre- or corequisite: 325. {Spring}

*330. **Speech Pathology in the Schools.** (3) Butt
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) Swisher
Structure and function of the speech and hearing mechanisms as they relate to normal and disordered communication. Prerequisite: permission of instructor. {Fall}

358. **Pre-Clinical Training.** (1) Bolton, Hood
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.)** Bolton, Butt, Chreist, Hood, Lamb
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. **Manual Communication.** (2) Fletcher, Hood
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 Manual Communication.** (2) Fletcher
Prerequisite: permission of instructor. {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}

*435. **Processes of Phonation.** (3) Chreist
The scientific study of normal and atypical processes of phonation as they affect communication. Prerequisites: 302, 325 and 350. {Spring}

*436. **Stuttering.** (3) Lybolt
Theories of stuttering and other rhythmic disorders and approaches to treatment. Prerequisite: 302 or permission of instructor. {Fall}

*438L. **Processes of Phonation Laboratory.** (1) Chreist
Projects and demonstrations in support of theory presented in 435. Pre- or corequisite: 435. {Spring}

440. **Undergraduate Problems. (1-3, to a maximum of 6)**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

*450. **Neurology and Neurophathologies of Speech.** [Neurological Foundations of Speech and Language] (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. [437] **Aphasia and Related Disorders.** [Aphasia] (3) Porch
Symbolic disorders of communication, including receptive and expressive speech and language problems. Prerequisites: 302, 430, and 450, or permission or instructor. {Spring}

*452. [537] **Clinical Aphasiology.** [Seminar in Aphasia] (3) Porch
Advanced diagnostic testing and clinical management of aphasia. Prerequisite: 451 or permission of instructor. {Fall}

*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) Pickett, Hudson
(See Engl 440.)

*493. **Reading and Research in Honors.** (3)
{Summer, Fall, Spring}

*494. **Senior Thesis.** (3)
{Summer, Fall, Spring}

*503. **Experimental Phonetics.** (3) Swisher

*506. **Seminar in Foreign Accent.** (3) Chreist

*520. **Hearing Science.** (3) Crum, Lamb

*530. **Language Disorders in Children.** (3) Butt

*531. **Communication Training of the Multi-Handicapped.** [Communication Problems of the Cerebral Palsied] (3) Butt

*535. **Seminar in Cleft Palate.** (3) Swisher

*536. **Seminar in Stuttering.** (3) Lybolt

538. [558] **Psycholinguistic Testing.** [Special Tests in Speech Pathology] (3) Butt

*539. **Seminar: Current Concepts in Speech Pathology and Audiology. (1, repeatable to a total of 2)** Lamb

*551-552. **Problems. (1-3 hrs. each semester)**

*555. **Seminar in Linguistics and Language Pedagogy. (1-3)**
(See Ling 555.)

*558. **Field Study.** [Special Tests in Speech Pathology] (6) Staff

*560. **Clinical Audiology I.** [Audiology and Audiometry] (3) Hood

*561. **Clinical Audiology II.** [Clinical Audiology] (3) Hattler, Lamb

*563. **Hearing Aids.** [Speech Audiometry and Hearing Aids] (3) Hood, McClellan

*565. **Seminar in Aural Rehabilitation.** (3) Hood
{Summer}

*566. **Seminar in Audiology.** (3) Lamb
{Summer}

*599. **Master's Thesis. (1-6 hrs. per semester)**

COMPARATIVE LITERATURE

COMMITTEE IN CHARGE: Chairperson to be appointed; PROFESSORS J. Kolbert, Ph.D. (Languages); A. Rodríguez, Ph.D. (Languages); ASSOCIATE PROFESSORS P. J. Gallacher, Ph.D. (English); D. C. McPherson, Ph.D. (English); P. Murphy, Ph.D. (Languages); P. K. Pabisch, Ph.D. (Languages); G. F. Peters, Ph.D. (Languages); W. S. Smith, Ph.D. (Languages); J. M. Tolman, Ph.D. (Languages); J. B. Zavadil, Ph.D. (English); ASSISTANT PROFESSOR B. T. Lindsey, Ph.D. (Languages).

Comparative literature is an interdepartmental program administered jointly by the Department of English and the Department of Modern and Classical Languages. 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 33 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 12 additional hours of courses in literature, 6 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 major.

The student is required to demonstrate reading proficiency in one foreign language by the satisfactory 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 language must be demonstrated, as in the comparative literature minor.

223-224. The Big Questions. (3)
(Also offered as Engl 223-224.) An introduction to literature as a humanistic study, with visiting lecturers from related areas of the humanities. The assignments will be grouped under major topics of importance to the everyday life of the individual ("Who Am I?," "What Is Love?," etc.)

260. Introduction to the Study of Comparative Literature. (3)
General introduction to comparative literature emphasizing problems of theme, genre, period, influence, reception, and translation, through the study of specific literary texts.

300. Studies in Literature. (3)
(See Engl 300.)

***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 Russ 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.)

400. Literary Movements. (3)
(See Engl 400.)

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.)

459. Irish Literature. (3)
(See Engl 459.)

470. Contemporary Literature. (3)
(See Engl 470.)

***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 580.)

***587. Genre: Comedy, Epic, Satire, Tragedy, etc.** (3)
(See Engl 587.)

***599. Master's Thesis.** (1-6 hrs. per semester)

COMPUTING AND INFORMATION SCIENCE

See Engineering, Computing and Information Science.

DANCE

See Theatre Arts, Dance.

DENTAL HYGIENE

Director to be appointed; ASSOCIATE PROFESSOR M. L. du Fault, Ed.M.; ASSISTANT PROFESSOR G. Taylor, Ed.M.; INSTRUCTORS J. Adams, B.S.; C. Miera, B.U.S.; H. Wright, Ed.M.; LECTURERS C. Cullen, D.D.S.; T. Parry, D.D.S.; ADJUNCT INSTRUCTORS R. Chimenti, D.D.S.; N. Copper, B.S.; T. Heflin, D.D.S.; I. Navarre, G.D.H.; W. Thornberry, D.M.D.; J. Watson, D.D.S.

DENTAL HYGIENE

CURRICULUM

See p. 85.

200. Orientation. (2) Wright
Survey of dental hygiene, dental assisting, dentistry, and related professions. Personal and oral health. Introduction to patient education. {Fall}

201. Preclinical Dental Hygiene. (2) Adams
Didactic introduction to the clinical skills of dental hygiene. {Fall}

202L. Preclinical Dental Hygiene Laboratory. (2) Staff
Introduction to the clinical skills of dental hygiene. 6 hrs. lab. {Fall}

203. Clinical Dental Hygiene. (2) Adams
Techniques of oral hygiene procedures through didactic instruction. {Spring}

204L. Clinical Dental Hygiene Laboratory. (3) Staff
Techniques of oral hygiene procedures in a clinical environment. Prerequisites: 200, 202L, 211L. 11 hrs. lab. {Spring}

210. Oral Anatomy. (3)
Anatomy of head and neck with emphasis on oral structures and their functions. Prerequisite: 200 or permission of instructor. {Spring}

211L. Dental Anatomy. (2) Miera
Morphology of tooth structure. 1 lecture, 3 hrs. lab. {Fall}

212L. Oral Radiography. (2) Adams
The physics of roentgenology, the operation of the x-ray machine, and the practice of taking and developing dental x-rays. 1 lecture, 2 hrs. lab. {Spring}

300. Integrative Dental Hygiene. (2) Taylor
Continuation of DH 203. Didactic instruction in dental hygiene sciences. {Fall}

301L. Integrative Dental Hygiene Lab. (4) Staff
Clinical experiences in dental hygiene procedures and practices. 11 hrs. lab. {Fall}

302. Integrative Dental Hygiene. (1) Taylor
Continuation of 300. {Spring}

303L. Integrative Dental Hygiene Laboratory. (5) Staff
Clinical experience in dental hygiene procedures and practices. Prerequisite: completion of all courses in first three semesters of professional curriculum. 19 hrs. lab. {Spring}

310. Histology. (2) Wright
Introductory study of cells, tissues, and organ systems of human body with emphasis on oral structures. Prerequisite: 210. 1 lecture, 2 hrs. lab. {Fall}

312. Pathology. (2)
Introduction to general pathology; pathology of diseases affecting teeth and their supporting structures; oral manifestations of systemic disturbances. Prerequisite: 310. {Spring}

320L. Dental Materials. (2) du Fault
A survey of materials used in dentistry; training in common dental laboratory procedures. Corequisite: 301L. 1 lecture, 2 hrs. lab. {Fall}

322. Insights to Public Health in New Mexico. [Dental and Public Health Education] **(2)** Wright
Introduction to philosophy and priorities of public health in New Mexico.

325. Nutrition. (3) Harris
(See H Ec 325.)

330. Oral/Dental Medicine. (2) Cullen
Diagnosis and recognition of the nature and cause of the disease process; principles of treatment; diagnosis, etiology, prevention, and control of diseases of teeth, their surrounding and supporting structures. Relation of dental health to total health. Prerequisite: 204L. {Fall}

342. Practice Management. (2) Wright
The principles, laws, and regulations related to dentistry and dental hygiene; essentials of office management, record keeping, and practice building. Prerequisite: fourth semester standing.

400. Seminar. (2) du Fault
Critical analysis of literature in the health and education professions. Prerequisites: Ed Fdn 310, permission of instructor. {Offered upon demand}

410. Internship Methods. (3) du Fault
Methods of programming, scheduling, testing, and team teaching in dental auxiliary programs. Emphasis on needs of individual students. Prerequisites: Ed Fdn 300, 310, Lib Sci 432. {Offered upon demand}

420L. Advanced Clinical Dental Hygiene. (3)
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}

DENTAL ASSISTING

CURRICULUM

100. Orientation. (2) Wright
(See DH 200.)

110. Oral Anatomy. (3)
(See DH 210.)

111L. Dental Anatomy. (2) Miera
(See DH 211L.)

121. Introductory Dental Sciences. (3)
Microbiology with emphasis on oral bacteria and immunology. Principles and practice of sterilization. Introduction to human anatomy, physiology, and patient and office management. 3 lectures. {Fall}

122L. Advanced Dental Science. (4)
Study of materials used in dentistry; experience in working with such materials in laboratory and clinical settings. Drugs in their relationship to dental care. Pathology of oral diseases; oral manifestations of systemic diseases. 2 lectures, 4 hrs. lab. {Spring}

131L. Principles of Dental Assisting. (2)
Detailed study of art of dental assisting. 1 lecture, 3 hrs. lab. {Fall}

132L. Practicum in Dental Assisting. (3)
Supervised clinical practice of dental assisting in selected facilities. Prerequisites: 121 and 131L. 12 hrs. lab. {Spring}

ECONOMICS

PROFESSORS G. Boyle, Ph.D. (Chairperson); S. Ben-David, Ph.D.; P. Chung, Ph.D.; S. Cohen, Ph.D.; R. Cummings, Ph.D.; M. Gisser, Ph.D.; P. Gregory, Ph.D.; D. Hamilton, Ph.D.; P. Jonas, Ph.D.; A. Kneese, Ph.D.; A. Parker, Ph.D.; N. Wollman, Ph.D.; ASSOCIATE PROFESSORS L. Brown, Ph.D.; A. Church, Ph.D.; W. Schulze, Ph.D.; D. Tailby, Ph.D.; P. Therkildsen, Ph.D.; L. Zink, Ph.D.; ASSISTANT PROFESSORS D. Dumont, Ph.D.; G. Libecap, Ph.D.; J. Myers, Ph.D.

Explanation of footnotes not indicated will be found on p. 118.

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 162, 163); 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 School of Business and Administrative Sciences.

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.

101. [100] **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.

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.** (3, 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, Myers
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.

326. **Financial Management.** (3)
(See B&AS 326.)

*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.

*335. **The Economics of Health.** (3)
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.

341. **Urban Economics.** (3) Church, Schulze
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) Schulze
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 P 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 principal 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.

*400. **Intermediate Micro-Economic Theory.** [Economic Theory] (3) Gisser
Fundamental features of the theory of value determination in competitive, monopolistic, and oligopolistic markets. Prerequisite: 300.

*404. **Intermediate Macro-Economic Theory.** (3) Chung
Fundamental features of classicism, Keynesianism, neoclassism, modern monetarism, their implications for stabilization policy, and elements of growth theory. The course would give graduate students a more solid preparation for advanced macro-economic theory and also serve as a terminal course in macro-economics for M.A. candidates. Prerequisite: 303 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.

*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.

*424. **International Economics.** (3) Tailby
Trade and balance of payments 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.

*440. **Regional Analysis.** (3) Zink
Analysis of regional economies, economic models. Prerequisites: 200, 201.

*442. **Natural Resources.** (3) Ben-David, Brown, Kneese, Wollman
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 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.

*465. **City Planning Methods.** (3)
(Also offered as Arch 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 Arch 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) Evans, 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)

*500. **Micro-Economic Theory.** (3) Gisser, Church
Prerequisites: 407 or equivalent, one year of calculus.

*501. **Advanced Micro-Theory.** (3) Gisser
Prerequisites: 500, Math 314.

*503. **Seminar in Economic Theory and Applied Economics.** (3)‡
Prerequisite: permission of instructor.

*504. **Quantitative Analysis II.** (3)
(See B&AS 501.)

*505. **Macro-Economic Theory.** (3) Dumont
Prerequisites: 303, Math 180-181.

*506. **Advanced Macro-Economic Theory.** (3)
Prerequisites: 505 and Math 314.

*507. **Programming and Growth.** (3)
Prerequisites: 407 and Math 314.

*508. **Data Construction and Evaluation in Economics.** (3) Brown
Prerequisites: 289, 407.

*509. **Econometrics.** (3) Brown
Prerequisites: Math 180, 181, 314, 345, and 346.

*509L. **Econometrics Laboratory.** (3) Ben-David, Brown
A computational laboratory designed to develop facility in the practical application of econometric techniques to applied economic problems. Includes computer programming and statistical techniques. Must be taken with Econ 509. {Fall}

*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) Goldsmith
(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.

*542. **Seminar in Natural Resource Planning.** (3) Ben-David, Wollman
Prerequisite: 300 or 500.

*543. **Seminar in Natural Resource Planning.** (3) Ben-David, Wollman
Prerequisite: 303 or 505.

*544. **Special Topics in Environmental Economics.** (3) Ben-David, Kneese
Prerequisite: 300 or equivalent. {Fall}

546. **Economic Education. (2 or 4) Parker, Doxtator
(Also offered as Bus Ed and Sec Ed 546.) {Summer only}

*547. **Mathematical Economics.** (3) Schulze
Prerequisites: 407 and 500. {Fall}

*548. **Seminar in Mathematical Economics.** (3) Schulze
Prerequisite: 547. {Spring}

*551-552. **Problems.** (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}

*579. **Monetary Aspects of International Economics.** (3)
Prerequisite: 424 or consent of instructor.

*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, Merkx, Needler, Schwerin
(Also offered as Anth, Hist, Pol Sc, and Soc 584.) {Spring}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School 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 Professor David Hamilton, Department of Economics, who is the adviser to all students in the Program.

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.

*485. **Philosophical Foundations of Economic Theory.** (3) Evans, Hamilton
(Also offered as Phil 485.) Philosophical backgrounds of classical and neo-classical, socialist and communist, and institutionalist economics. Prerequisite: Econ 201. {Spring 1977 and alternate years}

EDUCATION, ART

ASSOCIATE PROFESSOR J. Srubek, Ph.D. (Chairperson); PROFESSOR H. McConeghey, Ed.D.; ASSOCIATE PROFESSORS B. Schoonover, M.A.; A. P. Taylor, Ph.D.; N. Townsend, M.A.; ASSISTANT PROFESSOR P. Peterson, M.A.

MAJOR 1-12 AND 7-12 CURRICULUM

See p. 46.

MINOR STUDY

See p. 47.

GRADUATE PROGRAM

The Department offers an M.A. in Art Education. Also, a student may earn a Ph.D. or Ed.D. in Education with a concentration in **curriculum and**

instruction oriented toward art education. For details of the graduate programs, see the Graduate School Bulletin.

120-121. Techniques of Craft Education. (1-3, 1-3)
Beginning crafts and teaching methods for recreation situations. {Spring}

130-131. Techniques of Design Education. (3, 3)
Design in everyday life. {Fall}

214. [110] **Art in Elementary and Special Classrooms I.** [Creative Arts and Crafts in the Elementary Schools] **(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 [115]. {Summer, Fall, Spring}

215. [115] **Art in Elementary and Special Classrooms II.** [Creative Experience in Art for the Elementary School] **(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 [110]. {Summer, Fall, Spring}

220. Introduction to Art Education I [Pre-teaching Experiences in Art] **(3)** Peterson, Schoonover, Townsend
History, philosophy, psychology, theory, and concepts of teaching and learning strategies in art education, including actual observation of an involvement in art teaching situations. Initial screening course and prerequisite for 1-12 and 7-12 art certification curricula. {Fall, Spring}

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. [247] **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. [210 and 211] **Introduction to Art Education II.** [Creative Art in Secondary School and Creative Art 1-9] **(3)** Peterson, Schoonover, Townsend
Continuation of Art Ed 220 with increased emphasis on the integration of theory into actual observation and involvement in art teaching situations. Prerequisite: 220. {Fall, Spring}

391. [351] **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. [Student Teaching in the Elementary School] **(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}

401. Children and Art. (3)
Pre-school through adolescence. For art education minors only. Prerequisite: 220. {Spring}

§460. [434 and 461] **Student Teaching in the Middle/Junior High School.** [Teaching in the Secondary School and Student Teaching in the Secondary Schools] **(3, 6, 9)** 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. [434] **Student Teaching in the Senior High School.** [Teaching Art in the Secondary School] **(3, 6, 9)** Townsend
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}

492. [429] **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. [447] **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. [458-459] **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, Taylor

***561. Practicum in the Supervision of Instruction. (3)‡**
{Fall, Spring}

***565. Art and the Exceptional Child. (3)** Schoonover
(Also offered as Spec Ed 565.)

***585. Research Applied to Art Education. (3)** McConeghey, Srubek, Taylor
(Also offered as Ed Fdn 500.)

***590. Current Trends and Issues in Art Education. (3)** McConeghey, Srubek, Taylor

***591.** [551-552] **Problems. (1-3, maximum of 6)**

***592.** [529] **Workshop. (1-3)‡**
{Offered upon demand}

***593.** [547] **Topics. (1-3)‡**
{Summer, Fall, Spring}

***595.** [558-559] **Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisite: permission of instructor.

***599. Master's Thesis. (1-6 hrs. per semester)** McConeghey, Srubek, Taylor
See the Graduate School Bulletin for total hour requirements.

***696.** [610-611] **Internship. (3-6, maximum of 12)**

***699. Dissertation. (1-9 hrs. per semester)** McConeghey, Srubek, Taylor
See the Graduate School Bulletin for total hour requirements.

EDUCATION, EDUCATIONAL ADMINISTRATION

PROFESSORS R. E. Blood, Ph.D. (Chairperson); R. L. Holemon, Ed.D.; R. E. Lawrence, Ed.D.; R. F. Tonigan, Ed.D.; H. Ulibarri, Ed.D.; ASSOCIATE PROFESSORS I. R. Cordova, Ed.D.; P. A. Pohland, Ph.D.

The programs offered in this department are at the graduate level. For information concerning these programs, consult the Graduate School Bulletin.

***412. Public Education in New Mexico. (3)** Cordova, Ulibarri
A comprehensive study of the New Mexico public education systems. {Summer, Fall, Spring}

***492.** [429] **Workshop. (1-4)** Staff
Carries graduate credit when specifically approved by the Graduate School. Consult this catalog and the Graduate School Bulletin for restrictions. {Offered upon demand}

***493.** [447] **Topics. (1-3)** Staff

***495.** [458-459] **Field Experiences. (3-6, maximum of 12)** Staff
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, Holemon, Pohland
{Summer, Fall, Spring}

***510. School-Community Relations. (3)** Lawrence
Prerequisite: 509. {Summer, Fall, Spring}

***520. The School Principalship. (3)** Blood
Prerequisite: 509. {Summer, Fall, Spring}

***521. Public School Finance. (3)** Staff
{Fall}

***522. School Business Management. (3)** Staff
{Fall}

***526. Educational Planning and the School Plant. (3)** Tonigan
{Spring, Summer}

§A maximum of 15 hours of student teaching **combined** (all levels) is allowed.

*530. **Adult Education.** (3) Cordova, Ulibarri
{Fall}

*531. **Administration of Staff Personnel.** (3) Holemon, Pohland
Prerequisites: 509, 520. {Spring, Summer}

*532. **Current Educational Problems.** (3) Staff
{Offered upon demand}

*560. **Supervision of Instruction (Elementary and Secondary).** (3) Pohland
Prerequisites: 509, 520 for administration majors. {Summer, Fall, Spring}

*561. **School Law.** (3) Staff
Prerequisite: 509. {Summer, Fall}

*564. **School and Community Surveys.** (3) Tonigan
Prerequisite: 510. {Fall}

*571. **State and Federal Educational Administration.** (3) Lawrence
Prerequisites: 509, 510. {Spring, Summer}

*581. **Seminar in Educational Administration.** (3) Staff
Prerequisite: permission of instructor. {Summer, Fall, Spring}

*591. [551-552] **Problems. (1-3, maximum of 6)** Staff
{Summer, Fall, Spring}

*592. [529] **Workshop in Educational Administration. (1-4)** Staff
{Offered upon demand}

*593. [547] **Topics. (1-3)** Staff
{Summer, Fall, Spring}

*595. [558-559] **Advanced Field Experiences. (3-6, maximum of 12)** Staff
Prerequisite: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

*599. **Master's Thesis. (1-6 hrs. per semester)** Staff
See Graduate School 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, Holemon, Lawrence
Prerequisite: permission of instructor. {Fall}

*695. [612-613] **Field Experiences in Educational Administration. (1-6, maximum 6)** Staff
{Summer, Fall, Spring}

*696. [610-611] **Internship. (3-6, maximum of 12)**

*699. **Dissertation. (1-9 hrs. per semester)** Staff
See the Graduate School Bulletin for total hour requirements.

EDUCATION, EDUCATIONAL MEDIA

See Education, Educational Foundations, Educational Media.

EDUCATION, EDUCATIONAL FOUNDATIONS

PROFESSORS L. A. Rosasco, Ed.D. (Chairperson); J. G. Cooper, Ph.D.; V. John-Steiner, Ph.D.; W. P. Moellenberg, Ed.D.; J. C. Moore, Ph.D.; P. E. Resta, Ph.D. (Assistant Dean); A. W. Vogel, Ed.D.; J. T. Zepper, Ed.D.; ASSOCIATE PROFESSORS D. L. Bachelor, Ph.D.; P. Blackwell, Ph.D.; M. Harris, Ph.D.; J. W. Oller, Ph.D.; A. Ortega, Ph.D.; R. Trujillo, Ed.D.; G. Watson, Ed.D.; ASSISTANT PROFESSORS D. Chavez, Ph.D.; C. Garrett, Ph.D.; G. Levis, M.A.; L. Smith, M.L.S.

262. [292] **Introduction to the Study of Language. (3 or 4)**
(See Ling 292.)

284. **Afro-American History.** (3)
(Also offered as Hist 284.) Survey of Afro-American history beginning with Africa and continuing to contemporary Black America.

290. **Foundations of Education.** (3) Bachelor, Rosasco, Vogel, Zepper
An introduction to the philosophical, social, historical, and comparative foundations of education. {Summer, Fall, Spring}

291. [251] **Problems. (1-3)**

293. [247] **Topics. (1-3)**

300. **Human Growth and Development.** (1-3) Garrett, Harris, John-Steiner, Levis, Moellenberg, Rosasco
Principles of growth and development and implications for the school curriculum. {Summer, Fall, Spring}

310. **Learning and the Classroom.** (3) Blackwell, Garrett, Harris, John-Steiner, Moellenberg, Rosasco
The basic principles of learning and their application to classroom situations. {Summer, Fall, Spring}

352. **African Politics.** (3)
(Also offered as Pol Sc 352.) Course examines political development of new African states, impact of colonial rule, and problems of building new nation-states.

*362. **Language Testing and Multilingual Education.** (3)
(See Ling 362.)

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. [351] **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.

*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 philosophies 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 as 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) G. Levis
An overview of educational implications from the field of anthropology. {Offered upon demand}

*456. **Science, Technology, and Human Values: Implications for Education.** (3)
(Also offered as I Ed, Sec Ed 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. **Evaluation in the School Curriculum.** (3) Blackwell, Cooper, Moellenberg, Moore, Harris
An analysis of the educational and psychological tests used in a school testing program. {Summer, Fall, Spring}

*492. [*429] **Workshop in Foundations of Education.** (1-4)‡
For degree restrictions see p. 45 of this catalog or consult the Graduate School Bulletin. {Offered upon demand}

*493. [447] **Topics. (1-3)**

495. [458-459] **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) Cooper, Garrett, Levis, Moellenberg, Rosasco, Vogel, Zepper
(Also offered as Art Ed 585.)

***501. Research Methods in Education.** (3) Blackwell, Cooper, Garrett, Harris, Moellenberg, Moore

***503. Seminar in Human Growth and Development.** (3) Blackwell, Garrett, Harris, Moellenberg

***504. Computer Applications to Education.** [Computer Applications in Educational Research] (3) Cooper, Moore

***510. Seminar in Classroom Learning.** (3) Blackwell, Harris, Moellenberg

***515. Comparative Philosophies of Education.** (3) Vogel, Zepper

***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 Linguistics and Language Pedagogy.** (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.)

***591.** [*551-552] **Problems. (1-3 hrs. each semester)**

***593.** [*547] **Topics.** (1-3)‡

***595.** [*558-559] **Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See Graduate School Bulletin for total credit requirements.

***603. Research Design and Statistics in Education.** (3) Blackwell, Cooper, Harris, Moore

***604. Multivariate Design and Analysis in Educational Research.** (3) Blackwell, Cooper, Moore

***645. Advanced Seminar in Foundations of Education.** (3)‡

***650. Dissertation Seminar.** (1) Cooper, Harris, Resta

***696.** [*610-611] **Internship. (3-6, maximum of 12)**

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

EDUCATION, EDUCATIONAL MEDIA

The area of educational 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, and public school library certification. The requirements for New Mexico State certification of school librarians include (1) a valid teaching certificate for the level at which the librarian will serve and (2) a planned program of 18 hours in library science.# One course in children's literature and one AV course will be accepted as part of the 18 hours. If a candidate chooses to become certified for grades 1-12 and holds a valid teaching certificate for only elementary or only secondary, he may qualify for certification by completing a planned program of 24 hours in library science. Some educational media courses serve other departments as part of the teacher training program.

MAJOR STUDY

Not offered.

MINOR STUDY FOR UNDERGRADUATES IN EDUCATION

Lib Sc 424, 425, 427, 432, 433, 437, 460, and at least 3 hours from the following: 351, 441, 451.

MINOR STUDY FOR UNDERGRADUATES IN ARTS AND SCIENCES

Lib Sc 424, 425, 427, 432, 437, 460, and either 429, 433, 441, or 451.

LIBRARY SCIENCE

247. Introduction to the Library. (2)
A course designed to teach the use of the resources in the academic library. {Offered upon demand}

391. [351] **Problems.** (1-3)
Prerequisite: permission of instructor.

***424. Fundamentals of Library Science.** (3)
A survey of the history of libraries and books, social forces that have and are affecting the purposes and functions of libraries, types of libraries, their roles in society, the role of the professional librarian. {Fall}

***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. {Summer, Spring}

***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. Materials fee required. {Summer, Fall, Spring}

***433. Audio-visual Methods and Technology.** (3)
Application of instructional design and development principles to the planning and 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 instruction. Materials fee required. Prerequisite: 432 or permission of instructor. {Summer, Fall, Spring}

***434. TV Techniques and Use in Education.** (3) Watson
Research into educational uses of TV, operation of portable TV equipment; graphic, audio, lighting lab, and editing lab; planning and producing a Storyboard script and producing a video tape program. Lab fee. Prerequisite: permission of instructor. 432 recommended as introductory course. {Offered once each year}

***436. S8mm Film-Production and Use in Learning Environments.** (3) Watson
Research on use and value of film in education; social, cultural, and experiential 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. Prerequisite: permission of instructor. {Offered once each 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, Fall}

***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: permission of instructor. 432 recommended as introductory course. {Offered once each year}

***441. Children's Literature.** (2)
(Also offered as El Ed 441.) Pre- or corequisite: El Ed 331L. {Summer, Fall, Spring}

***451. Books and Related Material for Young Adults.** (3)
A survey of books and nonbook materials suitable for students of junior and senior high school age. Emphasis on utilization and evaluation of materials, adolescent reading, viewing and listening interests. {Fall}

***457. Government Documents.** (2-3)
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 on demand}

#Certification requirements are subject to change after Summer, 1977. Check with the Department of Educational Foundations for current certification requirements.

*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. [*429] **Workshop.** (1-4) Carries graduate credit when specifically approved by the Graduate School. Consult this catalog and the Graduate School Bulletin for restrictions. {Offered upon demand}

EDUCATION, ELEMENTARY

Chairperson to be appointed; PROFESSORS K. Auger, Ed.D.; D. W. Darling, Ed.D. (Dean); H. D. Drummond, Ed.D. (Associate Dean); C. E. Loughlin, Ed.D.; B. Spolsky, Ph.D.; M. V. Zintz, Ph.D.; ASSOCIATE PROFESSORS D. Brodkey, Ed.D.; M. L. Jaramillo, Ph.D.; M. Mann, Ph.D.; A. Pfeiffer, M.A.; B. Spolsky, Ph.D. (Dean, Graduate School); R. Van Dongen, Ph.D.; ASSISTANT PROFESSORS L. Ortiz, Ph.D.; S. D. Smith, Ph.D.; EMERITUS Marie Hughes, Ed.D.; AFFILIATED FACULTY N. Archuleta, Ph.D.; D. Kelly, Ed.D.; D. Lange, Ed.D.; Viola Sierra, Ed.D.

CURRICULA

See pp. 47-48.

§128. [100] **Directed Experiences with Children for Auxiliary Personnel, Level I.** (1-6)

§192. [129] **Workshop: The Paraprofessional in the Classroom.** (1-6)

§200. **Directed Experiences with Children for Auxiliary Personnel, Level II.** (1-6)

291. [251] **Problems.** (1-3) Prerequisite: permission of instructor.

§292. [229] **Workshop: Working with Children in Elementary Schools.** (1-6) Prerequisite: 192.

293. [247] **Topics.** (1-3)

300. **Bilingual Teaching Methods—Materials and Techniques.** (9) 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) Loughlin, Mann, Auger, Smith
Strategies and materials of effective learning experiences and classroom organization for young children. {Fall, Spring, Summer}

319. **Physical Education in the Elementary School.** (3) (Also offered as PE 319.) 4 class meetings a week. {Fall, Spring, Summer}

321L. **Teaching of Social Studies in the Elementary School.** (3) Staff
3 lectures, 1 hr. lab. {Fall, Spring}

331L. **Teaching of Reading in the Elementary School.** (3) Staff
3 lectures, 1 hr. lab. {Fall, Spring}

333L. **Teaching Oral and Written Language in the Elementary School.** (3) Staff
3 lectures, 1 hr. lab. {Fall, Spring}

341. **Techniques of Literary Presentations.** (2-3) 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) Staff {Fall, Spring}

361L. **Teaching of Mathematics in the Elementary School.** (3) Prerequisite: see Department of Mathematics. 3 lectures, 1 hr. lab. {Fall, Spring}

391. [351] **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, 33L, 353L, 361L. See additional requirements on p. 44. Special fee of $10 is charged. {Fall, Spring}

*405. **Curriculum for Early Childhood.** (3) Auger, Loughlin, Mann, Smith
Education of children 2-5. Prerequisite: H Ec 408L. {Summer, Fall, Spring}

*421. **The Social Studies Program in the Elementary School. (Estudios Sociales en las Escuela Primeria.)** (3) Drummond, Ortiz, Van Dongen, Warsh
Prerequisite: 321L. {Summer 1977 and alternate years, Fall}

*431. **The Reading Program in the Elementary School. (El Programa de Lectura en la Escuela Primaria.)** (2 or 3) 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) {Summer, Fall}

*435L. **Remedial Reading Problems.** (3) Van Dongen, Warsh, Zintz
(Also offered as Sec Ed 435L.) Includes 3 hrs. supervised laboratory each week. Prerequisite: El Ed 431 or permission of instructor. 3 lectures, 1 hr. lab. {Summer, Fall, Spring}

*441. **Children's Literature. (Literature Infantil.)** (3) Jaramillo, Van Dongen
(Also offered as Lib Sc 441.) Prerequisite: 331L. {Summer, Fall, Spring}

*442. **Games and Songs of New Mexico.** (3) 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}

*453. **The Science Program in the Elementary School.** (3) Tweeten
Prerequisite: 353L. {Summer 1977 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.

*461. **The Mathematics Program in the Elementary School.** (3) Darling
Prerequisite: 361L. {Summer 1977 and alternate years, and upon demand}

*470. **Supervision of Student Teaching in Elementary Schools.** (3) 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) Jaramillo, Ortiz, Pfeiffer, Zintz.
(Also offered as Sec Ed 481.) {Summer, Fall, Spring}

*482. **Teaching English as a Second Language.** (3) Brodkey, Jaramillo, Pfeiffer, Spolsky, White, Zintz
(Also offered as Sec Ed 482.) Prerequisites: Ling 292 or Engl 440 (may be taken concurrently) and permission of instructor. {Summer, Fall, Spring}

*492. [429] **Workshop. (Taller Pedagogico.)** (1-4) Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions consult the Graduate School Bulletin. {Offered upon demand}

*493. [447] **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. 43. {Fall, Spring}

*500. **Advanced Instructional Strategies.** (3) Auger, Loughlin, Smith
Prerequisite: permission of instructor. {Summer, Fall, Spring}

*505. **Seminar in Early Childhood Education.** (3-12) Auguer, Loughlin, Mann, Smith
Prerequisites: El Ed 405 and permission of instructor. {Summer, Fall, Spring}

*506. **The Middle School.** (3) (Also offered as Sec Ed 506.)

*507. **Developing Curriculum for Middle Schools.** (3) (Also offered as Sec Ed 507.) {Fall or Spring upon demand}

*508. **Instructional Strategies for Middle Schools.** (3) Stroumbis
(Also offered as Sec Ed 508.) {Fall or Spring, Summer upon demand}

*511. **Curriculum in the Elementary School.** (3-12) Auger, Darling, Drummond, Jaramillo, Ortiz
{Summer, Fall, Spring}

§Open to students in the A.A. in Education (Elementary) program only.

*512. **Arranging Learning Environments.** (3) Auger, Loughlin, Van Dongen
Prerequisite: permission of instructor. {Upon demand}

*515. **Remedial Teaching Techniques.** (3) Van Dongen, Warsh, Zintz
(Also offered as Sec Ed 515.)

*521. **Seminar in the Social Studies.** (3-12) Drummond, Ortiz

*531. **Seminar in Teaching Reading.** (3-12) Auger, Jaramillo, Van Dongen, Warsh, Zintz
{Summer, Fall, 1977 and alternate summers}

*532. **The Reading Process.** (3) Van Dongen, Warsh, Zintz
(Also offered as Sec Ed 532.) Prerequisites: El Ed 531 and 535L and permission of instructor. {Summer, Spring, 1978 and alternate summers}

*533. **Seminar in the Language Arts.** (3-12) Jaramillo, Van Dongen, Warsh, Zintz

*535L. **Practicum in Learning Disabilities (Reading).** (3) Van Dongen, Warsh, Zintz
(Also offered as Sec Ed 535L.) Includes 3 hrs. supervised laboratory each week. Prerequisites: 435L and El Ed 531 or Sec Ed 520. 3 lectures, 1 hr. lab. {Summer, Fall}

*538. **Teaching Reading in the Content Fields.** (3) Van Dongen, Warsh, Zintz
(Also offered as Sec Ed 538.)

*541. **Seminar in Children's Literature.** (3-12) Van Dongen

*542. **Principles of Curriculum Development.** (3) Auger, Drummond, Jaramillo
(Also offered as Sec Ed 542.)

*553. **Seminar in Teaching Elementary Science.** (3-12) Tweeten

*560. **Supervision of Instruction (Elementary).** (3)
(Also offered as Ed Adm 560.)

*561. **Seminar in Teaching Mathematics.** (3-12) Darling

*562. **Practicum in the Supervision of Instruction.** (3) Auger
(Also offered as Sec Ed 562.) May be repeated for a maximum of 12 hrs. {Fall, Spring}

*581. **Bilingual Education.** (3) Jaramillo, Ortiz, Pfeiffer, Spolsky, Zintz
(Also offered as Sec Ed 581.) {Fall and upon demand}

*582. **Curriculum Development for Bilingual/Bicultural Programs.** (3) Jaramillo, Ortiz, Pfeiffer
(Also offered as Sec Ed 582.) Offered with either Spanish-English emphasis (competency in Spanish language required) or with Navajo-English or other Southwest Indian language and English. Prerequisites: 581 and permission of instructor. {Spring and upon demand}

*591. [551] **Problems.** (1-3, maximum of 6)
{Summer, Fall, Spring}

*592. [529] **Workshop.** (1-4)
For degree restrictions consult the Graduate School Bulletin.

*593. [547] **Topics.** (1-3)

*595. [558-559] **Field Experience.** (3-6, maximum of 12)
Prerequisites: acceptance into a graduate program and permission of the instructor. {Summer, Fall, Spring}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*601. **Curriculum Appraisal and Improvement of School Programs.** (3)
(Also offered as Sec Ed 601.)

*643. **Curriculum Theory Seminar.** (3) Drummond
(Also offered as Sec Ed 643.) Prerequisite: permission of instructor.

*696. [610-611] **Internship.** (3-6, maximum of 12)
{Summer, Fall, Spring}

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

EDUCATION, GUIDANCE AND COUNSELING

Chairperson to be appointed; PROFESSORS L. Dahmen, Ed.D.; W. R. Fishburn, Ed.D.; G. L. Keppers, Ed.D.; W. R. Maes, Ph.D.; R. Micali, Ed.D.; ASSOCIATE PROFESSORS M. Heisey, Ph.D.; G. Zick, Ed.D.; H. Whiteside, Ed.D. (part-time); ASSISTANT PROFESSORS C. Morgan, Ph.D.; M. Stricherz, Ph.D.; J. Rinaldi, Ed.D. (Assistant Dean); S. Winther, Ed.D. (part-time); VISITING LECTURER, P. McGreevy, Ph.D.

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) Keppers
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. {Spring and upon demand}

*415. **Foundations of Counseling.** (3) Staff
Designed to provide the student with a basis for examiniation 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, Stricherz, 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}

*492. [429] **Workshop in Counseling.** (1-4) Staff
Carries graduate credit when specifically approved by the Graduate School. {Offered upon demand}

*493. [447] **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: 415 or permission of instructor.

*512. **Differential Diagnosis I.** (3) Heisey, Maes, Micali
(Also offered as Spec Ed 566.)

*513. **Socio-Economic Information in Counseling.** (3) Keppers

*514. **Organization and Supervision of Counseling Services.** (3) McGreevy, Rinaldi

*515. **Differential Diagnosis II.** (3) Staff
(Also offered as Spec Ed 567.)

*516. **Clinical Case Study.** (3) Staff

*517. **Group Counseling.** (3) Fishburn, Stricherz, Zick

*518. **Theories of Counseling.** (3) Maes, Stricherz, Zick

*519. **Practicum in Counseling.** (1-6) Staff

*540. **Counseling in the Elementary School.** (3) Dahmen, Heisey, McGreevy

*541. **Counseling and Play Therapy with Children.** (3) Heisey

*550. **College Personnel Work.** (3) Whiteside

*575. **Values Clarification.** (3) Whiteside
Prerequisite: permission of instructor.

*591. [551-552] **Problems.** (1-3, maximum of 6) Staff
Prerequisite: permission of instructor.

*592. [529] **Workshop in Counseling.** (1-4) Staff
For degree restrictions, consult the Graduate School Bulletin.

*593. [547] **Topics.** (1-3) Staff

*599. **Master's Thesis.** (1-6 hrs. per semester) Staff
See the Graduate School Bulletin for total credit requirements.

*620. **Seminar in Counseling.** (3) Staff

*621. **Advanced Theories of Counseling and Psychotherapy.** (3) Maes, McGreevy

*622. **Advanced Group Counseling and Psychotherapy.** (3) Fishburn, McGreevy

*630. **Advanced Practicum in Counseling, Counselor Education and Supervision.** (3-6) Dahmen, Fishburn, Mcali

*696. [610] **Internship.** (3-6, maximum of 12) Staff

*699. **Dissertation.** (1-9 hrs. per semester) Staff
See the Graduate School Bulletin for total credit requirments.

EDUCATION, HEALTH, PHYSICAL EDUCATION, AND RECREATION

PROFESSORS L. E. Griffin, Ed.D. (Chairperson); F. McGill, Ph.D.; F. Papcsy, Ph.D. (Director, Therapeutic Programs); E. Scholer, Ph.D.; A. Seidler, Ph.D. (Director, Graduate Studies); ASSOCIATE PROFESSORS H. Atterbom, Ph.D. (Director, Human Performance Laboratory); P. Dearth, Dr. P.H.; L. F. Diehm, M.S.; K. Lersten, Ed.D.; D. McAfee, Ph.D. (Program Coordinator, Health Education); N. Moolenijzer, Ph.D.; C. Piper, M.A.; ASSISTANT PROFESSORS W. Alles, Ph.D.; M. J. Campbell, Ph.D. (Program Coordinator, Professional Physical Education); W. De Groot, Ed.D. (Program Coordinator, Physical Education Basic Instruction Program); L. Estes, M.S.; B. Fahey, Ph.D.; G. Fenstermacher, Ph.D.; J. Gustafson, Ph.D.; V. Heyward, Ph.D.; R. Mitchell, M.S.; S. Rubio, Ph.D. (Program Coordinator, Recreation); E. Stone, Ph.D.; ADJUNCT ASSISTANT PROFESSORS E. G. Case, B.S.; F. Cohn, M.D.; J. McCabe, M.D.; G. Worley, B.S.; ADJUNCT INSTRUCTOR D. Corbin.

The Department offers a number of programs. The service program in physical education (see "Professional Courses") 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. 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. 48-51.

HEALTH EDUCATION

164. First Aid. (2)
Preparation in knowledge and skills to meet the needs in most situations where first aid care is needed. Students eligible for Standard Red Cross First Aid 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}

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. {Fall, Spring}

293. [247] **Topics. (1-3)**

301. General Safety Education. (3)
Basic principles of safety education. Current safety programs as they apply to school, home, and community. {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. {Fall, Spring}

345. Professional Experience in School and Community Health Education. [Professional Laboratory Experiences in Health Education] **(1-4)**
Prerequisite: health education majors only. {Summer, Fall, Spring}

391. [351] **Problems. (1-3)**
Prerequisite: permission of Health Education Coordinator. {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. {Summer only}

442. Emergency Health Care. (3)
Information and skills in recognizing and managing emergencies due to illness or injuries. Limited to juniors/seniors. Prerequisite: permission of Health Education Coordinator. {Summer, Fall, Spring}

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 300, or permission of instructor. {Summer, Fall, Spring}

#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 and health-practice, and critical study of problem areas related to classroom instruction and healthful school environment. Prerequisites: H Ed 171, Ed Fdn 300, or permission of instructor. {Fall}

471. [495] **Introduction to Community Health.**
New developments in research in major health problems, the ecology of local, national, and world health problems; motivational research as applied to changing health behaviors. Prerequisite: must be health education major or minor, or have permission of the instructor. {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 and every other summer}

***486.** [496] **Investigations in 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.** [*429] **Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate School. For degree restrictions see p. 45 of this catalog or consult the Graduate School Bulletin. {Offered upon demand}

***493.** [447] **Topics. (1-3)**

***495.** [458-459] **Field Experience. (3-6, maximum of 12)**
Planned and supervised professional laboratory or field experiences in agency or institutional setting. Prerequisite: permission of Health Education Coordinator. {Summer, Fall, Spring}

497. Readings and Research in Honors. (3-6)
Prerequisite: see p. 43.

***504. Research Seminar. (1)**

***506. Analysis of Health Concepts and Practices. (3)**
Prerequisite: minimum of an undergraduate minor in health education or permission of instructor. {Spring}

***511. Administrative Aspects of School and Community Health. (3)**

***516. Seminar in Health Education (3)**

***520. Teaching Human Sexuality. (3)**
Prerequisite: 212 or permission of instructor.

***591.** [551-552] **Problems. (1-3, maximum of 6)**
Only by permission of Health Education Coordinator.

#Limited to juniors and seniors only.

***592.** [*529] **Workshop. (1-4)**
For degree restrictions consult the Graduate School Bulletin.

***593.** [547] **Topics. (1-3)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

***696.** [*610-611] **Internship. (3-6, maximum of 12)**

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

PHYSICAL EDUCATION

BASIC INSTRUCTION PROGRAM—PHYSICAL EDUCATION

Most activity courses are offered every semester.

101. [100] **Beginning Swimming. (1)**
Instruction for students who have not been in the water or have a fear of water.

102. [101] **Intermediate Swimming. (1)**
Instruction in all basic strokes. For students who can swim.

103. [102] **Advanced Swimming. (1)**
Instruction and practice in perfecting all swimming strokes; competitive skills; synchronized skills.

104. [103] **Diving. (1)**
Instruction in basic fundamentals of springboard diving, primarily on one-meter board.

105. [104] **Water Polo. (1)**
Basic skills, strategy, rules, and terminology to play and officiate the game.

106. [105] **Lifesaving. (1)**
Instruction and practice in lifesaving techniques which lead to advanced Red Cross Lifesaving Certificate. Prerequisite: ability to swim, basic strokes.

107. [106] **Water Safety Instruction. (2)**
Instruction in swimming, teaching techniques for those who want to become teachers of swimming. Prerequisite: current Red Cross Senior Lifesaving Certificate.

108. [107] **Small Water Craft Operations. (2)**
Instruction and practice in canoeing, sailboating, kayaking, and in operation of small motor craft.

109. [108] **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. [109] **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. [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. [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 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 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. [170] **Basketball.** (Women) **(1)**
Instruction and practice of game skills with consideration given to the ability levels of students.

168. [172] **Basketball.** (Men) **(1)**
Instruction and practice of game skills with consideration given to the ability levels of students.

169. [137] **Beginning Judo. (1)**
Ancient Japanese methods of bare-handed fighting. A special uniform is necessary.

170. [175] **Volleyball. (1)**
Instruction and practice of basic game skills, with emphasis upon power techniques.

172. [179] **Field Hockey. (1)**
Instruction and practice of basic skills and rules of field hockey.

173. [180] **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. [177] **Flag Football. (1)**
Instruction and practice of basic game skills of flag football.

176. [184] **Ice Skating. (1)**
Special fees. Basic and intermediate skating, including figure skating, basic broom hockey, ice skating, and precision skating.

177. [186] **Beginning Skiing. (1)**
Special fees. Instruction leading to wide-track parallel skiing.

178. [187] **Intermediate Skiing. (1)**
Special fees. Review of beginning skills including beginning parallel skiing and instruction in more advanced techniques.

179. [189] **Cross Country Skiing. (1)**
Special fees. Instruction and practice in techniques leading to cross country touring.

180. [191] **Camping Experiences. (2)**
Instruction and field experiences designed to develop skills in shelter, food, warmth, and safety.

181. [192] **Horseback Riding. (1)**
Special fees. Basic fundamentals of western horsemanship in relationship to trail and recreation riding. (First meeting at Johnson Gymnasium.)

183. [194] **Wilderness Experience. (2)**
Special fees. Creation of stressful situations in the wilderness environment to help students learn more about themselves.

185. [195] **Bicycling. (1)**
Instruction in bicycle maintenance, safety, speed trial riding, and touring; includes speed trials and tours of various distances.

188. [198] **Therapeutic Physical Education. (1)**

190. Casting and Angling. (1)
Instruction in skills and techniques for fishing in New Mexico.

193. [147] **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. [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. [Teaching 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. [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. [Physical Fitness and Body Mechanics] **(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}

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}

245. Professional Laboratory Experiences 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}

289. [489] **Tests and Measurements in Physical Education. (4)**
Techniques to determine abilities, needs, and placement in the physical education program. {Fall, Spring}

293. [247] **Topics. (1-3)**
{Summer, Fall, Spring}

301. Teaching of Team Sports. (2)
Prerequisite: 211 or permission of instructor. 4 hours per week. {Fall}

302. Teaching of Individual and Dual Sports. (2)
Prerequisite: 211 or permission of instructor. 4 hours per week. {Spring}

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: 211 or permission of instructor. 4 hours per week. {Spring}

309. Teaching of Gymnastics. (2)
Prerequisite: 211 or permission of instructor. 4 hours per week. {Spring}

310. Folk Dance in the School Program. (2)
Prerequisite: 210 or permission of instructor. 4 hours per week. {Fall}

319. Physical Education in the Elementary School. (3)
(Also offered as El Ed 319.) 4 hrs. per week. {Summer, Fall, Spring}

326L. Physiology of Exercise. (3-6)
Prerequisite: PE 377. {Fall, Spring}

366. Theory and Practice of Teaching Dance. [Teaching of Modern 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. 3 class meetings per week. {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. Prerequisites: 273, 377, and H Ed 164.

377. [397] **Kinesiology. (6)**
Science of human motion. Pre- or corequisite: 289.

378. [398] **Principles of Physical Education. (3)**
The aims and objectives of physical education: physiological, psychological, and sociological principles which underlie practices in the profession. Prerequisite: permission of instructor. {Fall, Spring}

379. [399] **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. Prerequisite: 378 or permission of instructor. {Fall, Spring}

***388. Motor Learning and Performance. (3)**
Psychological and neurophysiological factors related to the development of motor skill, emphasis on the teacher's role in facilitating learning. {Fall, Spring}

391. [351] **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, 300, 310, PE 107, 245, 289, 301, 302, 309, 310, 319, 326L, 444, 445. {Fall, Spring}

444. Teaching of Physical Education I. (4)
(Also offered as Sec Ed 444.) Prerequisites: Ed Fdn 290, PE 210, 211, 245, 319, 388. {Fall}

452. Organization of Sports Programs. (3)
(Also offered as Recrea 452.) 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, 245, 289, 301, 302, 309, 310, 319, 326L, 444, Ed Fdn 290, 300, 310.

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisites: 107, 245, 289, 319, 326L, 301, 302, 309, 310, 444, Ed Fdn 290, 300, 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. {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.

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. (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 211 or permission of instructor. {Fall}

***481.** [491] **Administration of Varsity Athletics. (3)**
{Summer, Fall}

***482.** [492] **History of Physical Education. (3)**
{Spring}

***484.** [494] **Clinical Program for Corrective Therapy or Athletic Training. (3-6-9)**
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.** [*429] **Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 45 of this catalog or consult the Graduate School Bulletin. {Summer}

***493.** [*447] **Topics. (1-3)**
{Summer, Fall, Spring}

495. [458, 459] **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. 43. {Summer, Fall, Spring}

***503. Philosophies of Inquiry in Health, Physical Education, and Recreation. (3)**
Philosophies of inquiry, their development, nature, and place in health, physical education, and recreation. Prerequisite: graduate standing.

***504. Research Seminar. (1)**

***505. Foundations for a Philosophy of Physical Education. (3)**
Prerequisite: at least 3 hours in history, principles or methods of physical education. {Summer, Fall}

***510. Curriculum Construction in Physical Education. (3)**
{Spring, Summer}

***514. The Remedial Program in Physical Education. (3)**
{Spring, Summer}

***516. Seminar in Physical Education. (3)**
{Summer, Fall, Spring}

***521. Motor Learning of the Handicapped.** [Clinical Programs in Therapeutic Physical Education] **(3)**
(Also offered as Spec Ed 521.)

***522. Motor Learning of the Handicapped. (3)**
(Also offered as Spec Ed 522.)

***523. Biomechanics. (3)**
{Spring, Summer}

***527. Physiological Aspects of Exercise and Sport. (3)**
{Summer, Fall}

***530. Laboratory Procedures in Exercise Physiology. (3)**
Prerequisites: undergraduate course in exercise physiology and permission of instructor. {Summer, Fall}

***540. Sport in American Culture. (3)**
Prerequisite: Soc 101 or equivalent. {Spring, Summer}

***570. The Analysis of Teaching Physical Education. (3)**
Prerequisite: permission of instructor. {Summer, Fall}

***575.** [595] **Facilities Planning, Construction, and Utilization. (3)**
{Spring, Summer}

***588. Psychological Aspects of Sports. (3)**
Prerequisite: Psych 230 or 332 or equivalent. {Spring, Summer}

***591.** [551] **Problems. (1-3, maximum of 6)**

***592.** [529] **Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate School. For degree restrictions consult the Graduate School Bulletin. {Summer}

***593.** [547] **Topics. (1-3)**
{Summer, Fall, Spring}

***595.** [*558-559] **Advanced Field Experiences. (3-6)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

***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, Sec Ed 695.) Prerequisite: permission of instructor.

***696.** [610-611] **Internship. (3-6, maximum of 12)**
{Summer, Fall, Spring}

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School 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}

275. Camp Leadership. (3)
To introduce students to camp experiences and to study organizational and administrative aspects, 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. Prerequisite: majors/minors only. {Summer, Fall, Spring}

293. [247] **Topics. (1-3)**
{Offered upon demand}

301. Recreational Sports. (3)
The professional course in recreational sports. Prerequisite: permission of instructor. 3 class meetings per week. {Fall}

302. Recreational Sports. (3)
Continuation of 301. {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, Spring}

321. Recreational Leadership. (3)
Methods and materials in recreational leadership: theory, principles, and practice. Prerequisites: 175, 290. Majors/minors only. {Fall, Spring}

345. Professional Laboratory Experiences in Recreation. (3)
Must be taken in conjunction with 321. Prerequisite: majors/minors only. {Fall, Spring}

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. [351] **Problems. (1-3)**
Prerequisite: permission of the recreation coordinator. {Summer, Fall, Spring}

400. Environmental Awareness in Outdoor Recreation Areas. (3)
Prerequisite: 378. {Summer, Spring}

***407. History and Philosophy of Parks and Recreation.** [History and Philosophy of Recreation in the United States] **(3)**
The historical development of recreation concepts and philosophies. {Fall}

452. Organization of Sports Programs. (3)
(Also offered as PE 452.) Organization and administration of games and sports in intramural, interschool, and community recreation programs. Prerequisite: permission of instructor. {Fall, Spring}

***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. Prerequisite: 321. {Fall}

***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. {Summer, Fall}

480. Administration of Recreation Programs. (3)
The organization, administration, and conduct of recreation programs at the community level. Prerequisite: 454. {Spring}

***485. Interpretative Services in Outdoor Recreation Areas.** [Interpretative Services in Outdoor Recreation Programs] **(3)**
Field trips. {Spring}

***486.** [490] **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.** [429] **Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate School. For degree restrictions, see p. 45 of this catalog or consult the Graduate School Bulletin. {Offered upon demand}

***493.** [447] **Topics. (1-3)**
{Offered upon demand}

495. [458, 459] **Field Experience. (3-6)**
Prerequisite: 345, 458. {Summer, Fall, Spring}

497. Reading and Research in Honors. (3-6)
Prerequisite: see p. 43. {Offered upon demand}

***504. Research Seminar. (1)**
(See PE 504.)

***508. Organization and Administration of Public Recreation.** [Recreation Administration] **(3)**
{Fall}

***516. Seminar in Recreation. (3)**
{Spring}

***524. Evaluation of Park and Recreation Resources and Programs. (3)**

***540. Outdoor Recreation Planning.** [Systems Approach for Outdoor Recreation Planning] **(3)**
{Spring}

***555. Contemporary Leisure Concepts.** [Socio-Psychological Concepts of Leisure] **(3)**
{Fall}

***586. Principles of Therapeutic Recreation. (3)**
{Spring}

***591.** [551-552] **Problems. (1-3, maximum of 6)**
Prerequisites: majors only and permission of the recreation coordinator.

***592.** [529] **Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate School. Consult the Graduate School Bulletin for restrictions.

***593.** [547] **Topics. (1-3)**

***595.** [558-559] **Advanced Field Experiences. (3-6, maximum of 12)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See Graduate School Bulletin for total credit requirements.

***696.** [610-611] **Internship. (3-6, maximum of 12)**
{Summer, Fall, Spring}

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

EDUCATION, HOME ECONOMICS

Chairperson to be appointed; PROFESSOR E. Snell, Ed.D.; ASSOCIATE PROFESSOR M. M. Smith, M.S.; ASSISTANT PROFESSORS I. H. McMurray, M.S.; E. Naimark, Ph.D.; S. Park, Ph.D.; INSTRUCTOR L. Quintana, M.S.

MAJOR STUDIES AND CURRICULUM
See pp. 51-52.

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) McMurray
Fitting and altering patterns and garments, methods or 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 preparation of food. Meal planning and service. Prerequisite: 120L or equivalent. 1 lecture, 4 hrs. lab. {Fall}

250. Clothing and Human Behavior. (2) McMurray
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) McMurray
Construction, identification, use, and care of clothing and household textiles. Consumer education related to textile products. {Fall, Spring}

254L. Tailoring. (3) McMurray
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}

303. Practicum. (3)
On-the-job training assignment topics for study are developed that lead to the understanding of the role and responsibilities of a clinical dietitian. Prerequisite: junior standing. {Summer}

325. Intermediate Nutrition. (3)
Nutrition related to the chemistry, physiology of the human body; interrelationships of nutrients, analysis of nutritive value of foods. Prerequisites: H Ec 125, organic and inorganic chemistry. {Spring}

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. [351] **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) Sanders
Student demonstrates and practices the role and responsibility of a clinical dietitian. Prerequisites: senior standing concurrent with 426, 403. {Fall, Spring}

405L. Evaluation Practicum, Community Nutrition. (4)
Determination of student's competencies as a community nutritionist. Prerequisites: senior standing, 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. Prerequisites: 102, Psych 102, junior standing. 2 lectures, 3 hrs. lab. experience. {Fall, Spring}

418. Family Relationships. (3) Naimark
Survey of research in family studies. Practical applications for families will be considered. {Fall, Spring}

425. Introduction to Clinical Nutrition. (3) Owens
(Also offered as Clin Sci 425.) Determination of nutritional status of normal persons by the health team, using research methodology. Prerequisites: physiology, H Ec 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) Lockett
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 adaption of diets in the treatment of impaired digestive and metabolic conditions. Prerequisites: Chem 141L, 281.

***431L. Experimental Foods. (3)**
Experimental methods applied to food preparation, food marketing and food laws. Prerequisite: Chem 141L. 2 lectures, 3 hrs. lab.

434. Organization and Management. (3) Lockett
A study of the principles of organization and management applied to food service installations. Prerequisite: Psych 102; pre- or corequisite: B&AS 306.

443. Family Decision Making. (3) Smith
Family decisions in the allocation and use of resources to meet family goals. Prerequisites: Soc and Anthro; junior standing. {Fall}

***444. Family Finance. (3)** Smith
Economic problems of direct concern to the family. Prerequisites: 443, a basic course in economics, psychology, and sociology. {Spring}

445L. Home Management Lab. (4) Smith
Experiences in dealing with families with varying value structures and for identifying values and goals held by others. Prerequisite: 443. Special fee $50.00. {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)** Naimark
The impact of environmental factors upon the aging family will be explored. Prerequisite: H Ec 418 or permission of instructor. {Spring}

***493.** [*447] **Topics. (1-3)**

***509L. Organization and Management of Nursery Schools and Kindergarten. (3)**

***510. Young Child at Home and School. (3)**

***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)** Naimark

***535. Seminar in Nutrition. (3)**

***549. Managing Family Resources. (3)** Smith

***554. Socio-Psychological Aspects of Clothing. (3)** McMurray

***555. Seminar in Textiles. (3)**

***591.** [*551-552] **Problems. (1-3 hrs. each semester)**

***592.** [*529] **Workshop. (1-4)**
For restrictions, consult the Graduate School Bulletin.

***593.** [*547] **Topics. (1-3)**

***696.** [*610-611] **Internship. (3-6, maximum of 12)**

HOME ECONOMICS EDUCATION

361. Pre-Student Teaching Experience in Secondary Education. (3) Snell
2-hour seminar, 3 hrs. field work weekly. Concurrent with 437. {Spring}

391. [351] **Problems. (1-3)**

***437. Teaching of Home Economics. (3)** Snell
{Spring}

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisite: 437. {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. Home Economics Seminar. (2)
Trends in vocational home economics education. {Fall, Spring}

***475. Evaluation in Home Economics. (3)** Snell
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)** Snell
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.** [*429] **Workshop. (1-4)**
For degree restrictions see p. 45 of this catalog and the Graduate School Bulletin. Carries graduate credit when specifically approved by the Graduate School. {Offered upon demand}

495. [458-459] **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. 43. {Offered upon demand}

***570. Seminar in Home Economics Education. (3)** Snell

***591.** [*551-552] **Problems. (1-3, maximum of 6)**

***592.** [*529] **Workshop. (1-4)**

***595.** [558-559] **Advanced Field Experiences. (3, maximum total allowed 6)**
Prerequisites: acceptance into a graduate program and permission of instructor. {Summer, Fall, Spring}

EDUCATION, INDUSTRIAL

See Education, Secondary.

EDUCATION, LIBRARY SCIENCE

See Education, Educational Foundations, Educational Media.

EDUCATION, MUSIC

See Music Education.

EDUCATION, PHYSICAL

See Education, Health, Physical Education, and Recreation.

EDUCATION, SECONDARY AND ADULT TEACHER

CURRICULUM AND INSTRUCTION

PROFESSORS R. L. Wagoner, Ed.D. (Chairperson); R. J. Doxtator, Ed.D.; R. D. Kline, Ph.D.; P. Prouse, Ph.D.; W. B. Runge, Ed.D.; G. C. Stoumbis, Ed.D.; P. W. Tweeten, Ph.D.; ASSOCIATE PROFESSORS G. Hirshfield, Ed.D.; S. A. Mierzwa, Ph.D.; R. H. White; ASSISTANT PROFESSOR C. R. Stoughton, Ph.D.; and new appointments to be made.

BUSINESS EDUCATION

PROFESSOR E. J. Weber, Ph.D. (Assistant Chairperson); ASSISTANT PROFESSORS C. McQueen, Ed.D.; G. D. Nord, Ph.D.; E. I. Walls, Ed.D.

INDUSTRIAL EDUCATION

ASSOCIATE PROFESSOR F. R. Field, Ed.D. (Assistant Chairperson); PROFESSOR R. D. Nesbitt, M.Ed.; ASSOCIATE PROFESSOR G. E. Cunico, Ed.D.; ASSISTANT PROFESSOR D. R. St. John, Ph.D.

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.

SECONDARY EDUCATION

§§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}

391. [351] **Problems.** (1-3)
{Offered upon demand}

§425L. [435L] **Teaching of Biology.** (3) Degenhardt
Prerequisites: 361, Biol 122L, 2 lectures, 3 hrs. lab. {Fall}

430. **Teaching of Communication Arts.** (3) Hirshfield, White
Prerequisite: 361, 362, and Ling 292 or Engl 440. {Fall}

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) Doxtator, Stoumbis
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 434.)

*435L. **Remedial Reading Problems.** (3) Van Dongen, Zintz
(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. {Spring}

*437. **Teaching of Home Economics.** (3) Snell
(See H Ec Ed 437.)

§438. **Teaching of Mathematics.** (3) Mierzwa, Mitchell
Prerequisites: 361 and 362. {Fall}

439. **Teaching of Business Subjects.** (3)
(See Bus Ed 439.)

*440. **Teaching of French.** (3) T. Book
(Also offered as French 440.) Prerequisite: Sec Ed 361. {Spring}

*441. **Teaching of Spanish.** (3)
(Also offered as Spanish 441.) Applies lingusitics 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: Sec Ed 361. {Fall, Spring}

*442. **Teaching of Reading.** (3) White
Prerequisites: 361 and Ling 292 or English 440. {Summer, 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) Hinger
(Also offered as PE 444.) {Fall}

*445. **Teaching of German.** (3) Jesperson
(Also offered as German 445.) Prerequisites: Sec Ed 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.), Sec Ed 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: Sec Ed 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.) Examination 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. 44. {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.

*480. **Second Language Pedagogy.** (3)
(Also offered as Mod Lang 480.)

*481. **Education Across Cultures in the Southwest.** (3) Pfeiffer, Zintz
(Also offered as El Ed 481.) {Summer, Fall, Spring}

*482. **Teaching English as a Second Language.** (3) Brodkey, Pfeiffer, Spolsky, White, Zintz
(Also offered as El Ed 482.) Prerequisites: Ling 292 or Engl 440 (may be taken concurrently) and permission of instructor. {Summer Fall, Spring}

*492. [*429] **Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 45 of this

§§ Students in Sec Ed 361 must enroll concurrently in the appropriate section of Ed Fdn 300. Students in Sec Ed 362 must enroll concurrently in the appropriate section of Ed Fdn 310 (consult Schedule of Classes).

§ Credit for undergraduate teaching majors and graduates in education only.

catalog or consult the Graduate School Bulletin. {Offered upon demand}

*493. [*447] **Topics.** (1-3)

495. [458-459] **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. 43. {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)

*506. **The Middle School.** (3)
(Also offered as El Ed 506.) {Fall or Spring, Summer upon demand}

*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.** [Seminar in Supervision of Student Teaching] (1-3)

*510. **Developments in Industrial and Vocational Education.** (3)
(Also offered as Bus Ed, I Ed 510.)

*515. **Remedial Teaching Techniques.** (3) Zintz
(Also offered as El Ed 515.) {Summer, Spring 1978 and alternate years}

*520. **Instructional Trends in the Communication Arts.** (3)

*521. **Seminar in English Curriculum and Instruction.** (2-5)

*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)

*532. **The Reading Process.** (3) Van Dongen, White, Zintz
(Also offered as El Ed 532.) Prerequisites: 535L, El Ed 531, and permission of instructor. {Summer, Spring 1978 and alternate years}

*535L. **Practicum in Learning Disabilities (Reading).** (3) Van Dongen, Zintz
(Also offered as El Ed 535L.) Includes 3 hrs. supervised lab. each week. Prerequisites: 435L and El Ed 531 or Sec Ed 520. {Summer, Fall, Spring}

*538. **Teaching Reading through the Content Field.** (3) Van Dongen, White, Zintz
(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) Stoughton
(Also offered as El Ed 542.) {Spring 1977, Summer, and alternate years}

*546. **Economic Education.** (2 or 4)
(Also offered as Econ 547 and Bus Ed 546.)

#*549. **History Education.** (3)
(Also offered as Hist 550.)

*550. **Seminar in History Education.** (3)

*556. **Proseminar in Problems of Language Instruction.** (3)
(See Spanish 543.)

*562. **Practicum in the Supervision of Instruction.** (3) Auger
(Also offered as El Ed 562.) May be repeated for a maximum of 12 hrs. {Fall, Spring}

*581. **Bilingual Education.** (3) Jaramillo, Pfeiffer, Spolsky, Zintz
(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)
{Summer, Fall, Spring}

*591. [*551-552] **Problems.** (1-3, maximum of 6)

*592. [*529] **Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate School. Consult the Graduate School Bulletin for restrictions.

*593. [*547] **Topics.** (1-3)

*595. [*558-559] **Advanced Field Experiences.** (3-6, maximum 12)

*599. **Master's Thesis.** (1-6 hrs. per semester)

*601. **Curriculum Appraisal and Improvement of School Programs.** (3) Drummond
(Also offered as El Ed 601.)

*643. **Curriculum Theory Seminar.** (3) Drummond
(Also offered as El Ed 643.) Prerequisite: permission of instructor. {Spring}

*696. [610-611] **Internship.** (3-6, maximum of 12)

*699. **Dissertation.** (1-9 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; B&AS 201, 202.

¶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 wam minimum. Pre- or corequisite: 112; prerequisite: 113A or equivalent. {Fall, Spring}

117. **Office Machines and Filing.** (3)
Laboratory work in printing and visual display electronic calculators, 10-key adding machine, transcription from recorded dictation, filing. 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. Separate sections for Gregg and Forkner shorthand systems. Prerequisites: 112, 113B (Forkner), 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}

350. **Vocational Office Laboratory.** (2-3)
Work experience (6-9 hours per week) for college credit under supervision in approved work station. Prerequisites: business

Available for graduate credit except for graduate majors in economics or history.
¶ No credit allowed toward degrees in Colleges of Arts and Sciences and Pharmacy.
§ Maximum of 6 hours credit allowed in Arts and Sciences. No credit allowed in Pharmacy.
° Maximum of 6 hours credit allowed in Arts and Sciences and Pharmacy.

education skills courses and permission of instructor. {Fall, Spring}

PROFESSIONAL

391. [351] **Undergraduate Problems. (1-3)** Weber

439. Teaching of Business Subjects. (3) McQueen
{Offered upon demand}

***443. Coordination Techniques in Vocational Cooperative Programs. (3)** Runge
(Also offered as Sec 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 plans for distributive, office, and industrial occupations. {Summer only}

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}

***492.** [*429] **Workshop in Business Education. (1-4)** McQueen
{Offered upon demand}

***493.** [*447] **Topics. (1-3)**

495. [458-459] **Field Experience. (3-6, maximum of 12)** Weber
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)**

***510. Developments in Industrial and Vocational Education. (3)**
(Also offered as Sec Ed, 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)**

°**546. Economic Education. (2 or 4)**
(Also offered as Econ, Sec Ed 546.)

***591.** [*551-552] **Graduate Problems. (1-3 hours each semester)**

***592.** [*529] **Workshop in Business Education. (1-4)**

***593.** [*547] **Topics. (1-3)**

***595.** [*558-559] **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. {Fall, Spring}

110L. Machine Woodworking. (3) St. John
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 laminating. 2 lectures, 3 hrs. lab. {Fall, Spring}

111L. Introduction to Graphic Communication. [Industrial Graphics and Design I] **(3)** St. John
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. [Industrial Graphics and Design II] **(3)**
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
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, Spring}

165L. [265L] **Safety, Service and Preventive Maintenance.** [Finishing and 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, St. John
Design theory and principle as applied to the research and development functions of industry. Product development via team organization, brainstorming, data analysis, technical writing, oral presentations, and creative problem solving. 2 lectures, 3 hrs. lab. {Offered upon demand}

230L. Power Mechanics. (3) Nesbitt
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, Spring}

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. [470L] **Construction Technology.** [Carpentry] **(3)** St. John
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. [Electricity and Electronics I] **(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) 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) St. John
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
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. {Fall, Spring}

350L. Cabinet Making. (3) St. John
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. {Spring}

°Available for graduate credit except for graduate majors in economics or history.

365L. Advanced Machine Metalworking. (3) Field
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. [Electricity and Electronics II] (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 or equivalent. {Fall, 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 or equivalent. {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) St. John
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, St. John
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. [247] **Topics.** (1-3)

391. [351] **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, St. John
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
Prerequisite: 433.

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15) Field
Prerequisite: application and approval during the spring semester immediately preceding student teaching. {Fall}

466. Theory and Organization of Industrial Education. (3) Cunico, Field, Nesbitt, St. John
An analysis of organizing and teaching of industrial subjects as found in the modern school. {Offered upon demand}

492. [429] **Workshop in Industrial Education.** (1-4)
For degree restrictions, see p. 54 of this catalog. {Offered upon demand}

***493.** [*447] **Topics.** (1-3) Staff

495. [458-459] **Field Experience. (3-6, maximum of 12).** Field
(Also offered as Art Ed, Bus Ed, Ed Adm, Ed Fdn, Phys Ed, Recrea, H Ec Ed, Sec Ed 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, Runge, St. John
(Also offered as Sec Ed, Bus Ed 443.)

***456. Science, Technology, and Human Values: Implications for Education.** (3)
(Also offered as Ed Fdn, Sec Ed 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.

***481.** [490] **Measurement and Evaluation Techniques.** (3) Cunico, Field, Nesbitt

***482.** [*492] **Instructional Analysis.** (3) Cunico, Nesbitt

***483.** [*498] **World of Construction.** (3) Field, Cunico
{Summer only}

***484.** [*499] **World of Manufacturing.** (3) Field
{Summer only}

***490. Measurement and Evaluation Techniques.** (3) Cunico, Field, Nesbitt

***493.** [*447] **Topics.** (1-3) Staff

***499. World of Manufacturing.** (3) Field
{Summer only}

***505. Development, Selection, Use, and Organization of Instructional Materials.** (3) Cunico, Nesbitt, St. John

***510. Development in Industrial and Vocational Education.** (3) Nesbitt, Runge, St. John
(Also offered as Bus Ed, Sec Ed 510.)

***511. Laboratory Planning and Design.** (3) Field, Nesbitt

***515. Industrial Accident Prevention.** (3) Nesbitt, St. John

***520. Administration of Industrial and Vocational Programs.** (3) Cunico, Field, Nesbitt

***525. Advanced Technical Knowledge and Skills.** (3)†† Cunico, Field, Nesbitt, St. John

***591.** [*551-552] **Problems.** (1-3)

***592.** [*529] **Workshop.** (1-4)
For degree restrictions consult the Graduate School Bulletin.

***593.** [*547] **Topics.** (1-3)

***595.** [*558-559] **Advanced Field Experience I and II. (3, maximum of 6)††**

EDUCATION, SPECIAL EDUCATION

PROFESSORS B. L. WATSON, Ed.D. (Chairperson); G. W. Adamson, Ed.D.; R. L. Kroth, Ed.D.; R. L. McDowell, Ed.D.; F. E. Papscy, Ph.D.; VISITING PROFESSOR J. O. Smith, Ed.D.; ASSOCIATE PROFESSORS J. S. Everett, Ed.D.; H. J. Pepe, Ed.D.; M. N. Shelton, Ph.D.; G. D. Van Etten, Ed.D.; VISITING ASSOCIATE PROFESSOR D. Smith, Ed.D.; ASSISTANT PROFESSOR E. R. Gonzales, Ph.D.; ADJUNCT ASSOCIATE PROFESSOR G. W. Brown, M.D.; ADJUNCT ASSISTANT PROFESSOR V. Sierra, Ph.D.; LECTURER C. Van Etten, Ed.S.

CURRICULUM

201. [211] **Education of the Exceptional Person.** [Education of the Exceptional Child] (3)
Designed to provide a survey of the characteristics and educational needs of exceptional children. To include definition, etiology, characteristics, and various educational alternatives for each of the exceptionalities. Corequisite: 204. {Fall, Spring}

202. 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.

204. [210] **Introduction to Special Education.** (1)
Work experience and seminars in special education settings. Required of all undergraduates. Corequisite: 201, student must receive B or better before being screened into the Special Education Teacher Training Program. {Fall, Spring}

294. Teaching Music in the Elementary Schools. (2)
(Also offered as Mus Ed 294.) Prerequisite: 293 for non-music majors; 194 for music majors. {Summer, Fall, Spring}

297. Music for Special Education. (2)
(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}

304. [300] **Teaching Strategies in Special Education.** [Adaptive Instructional Techniques] **(6)**
Develops skills in observation, informal testing of basic academic skills, diagnosis of learning problems, implementation of an educational program for one child as well as for a group of children. Prerequisites: 201, 204, 320, 322; corequisite: 403. For majors in this department only; permission of instructor required. {Fall, Spring}

320. [221] **Nature and Needs of Mentally Retarded. (3)**
Offers an intense study of the social, medical, emotional, physical, and mental characteristics of mentally retarded children. Emphasis is placed on methods of classifying, diagnosing, and treating retarded children from medical, psychological, sociological, and educational points of view. Prerequisites: 201, 204. Special permission required to take 201, 204, and 320 together. {Fall, Spring}

322. Teaching the Educable Mentally Handicapped. [Teaching the Mentally Retarded] **(3)**
For students interested in the education of educable mentally retarded individuals. Reading and discussion of global objectives reflecting the needs of the retardate to achieve success and independence in the adult community will be integrated with lectures on curriculum and instructional theory. Prerequisites: 201, 204, 320, permission of instructor. For majors in this department only. {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. [351-352] **Problems. (1-3, maximum of 6)**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

403. [317] **Methods and Materials in Special Education. (3)**
Culminating experience to be taken in conjunction with 304. Interpretation, design, development, and implementation of methods and materials in special education. Corequisite: 304, student must have program of studies (contract) on file. UNDERGRADUATES ONLY. {Fall, Spring}

***404. Teaching Children with Learning Disabilities. (3)**
Identifying and educating children with learning disabilities. Open to all students. {Fall, Spring}

405. [410] **Undergraduate Seminar in Special Education. (3)**
Students need to share their student teaching experience with other students and receive feedback for their involvement. Topics of interest will be discussed as well as ways of dealing with possible troublesome teaching or interaction problems. Prerequisite: 201, 204, 320, 304, 322 or 452, permission of department; corequisite: 424. For majors in this department only. {Fall, Spring}

***409.** [*415] **Affective Education and the Exceptional Person.** [Social and Psychological Problems in Special Education] **(3)**
Cultural, social, intellectual, adjustive, and educational factors relevant to the understanding of ideological and therapeutic problems in special education. Prerequisites: 201, 204, and program of studies (contract) on file. {Summer, Fall, Spring}

424. [400] **Student Teaching—Special Education.** [Student Teaching in Elementary School] **(6-9)**
Provides the student with the appropriate setting so he/she can develop observational learning teaching skills that will affect the quality and success of children's learning. Prerequisite: majors in department only. {Fall, Spring}

***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.** [*431] **Nature and Needs of the Behaviorally Disordered.** [Characteristics of the Emotionally Disturbed Child] **(3)**
An introductory course in the education of the emotionally handicapped child with emphasis on psychological, sociological, and educational implications. Open to all students. {Fall, Spring}

452. [362] **Teaching the Severely/Profoundly Handicapped.** [Teaching the Severely Mentally Retarded] **(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)
Corequisites: 405, 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)**
(Also offered as PE 467.) To investigate the etiology, characteristics, and treatment programs necessary for teaching the physically handicapped child. Prerequisites: 210, 211, and program of studies (contract) on file. {Fall}

***492.** [429] **Workshops in Special Education. (1-4)**
Prerequisite: permission of instructor. Carries graduate credit when specifically approved by the Graduate School. Consult this catalog and the Graduate School Bulletin for degree restrictions.

***493.** [447] **Topics in Special Education. (1-3)**

495. [458-459] **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.** [*514] **Instructional Strategies in Special Education. (3)**

***505.** [*573] **Seminars in Special Education. (3)**

***508.** [*510] **Techniques of Parent Counseling. (3)**
(Also offered as Guid 510.)

***513.** [*517] **Curriculum Development in Special Education. (3)**

***521. Clinician Programs in Therapeutic Physical Education. (3-6)**
(Also offered as PE 521.)

***532. Education of the Behaviorally Disordered.** [Education of Emotionally Disturbed Children] **(3)**

***542. Teaching the Learning Disabled.** [Learning Disabilities] **(3)**

***552.** [562] **Teaching the Severely/Profoundly Handicapped.** [Education of the Severely Handicapped] **(3)**

***564. Administration and Use of Diagnostic Tests in Special Education. (3)**

***565. Art for the Exceptional Child. (3)**
(Also offered as Art Ed 565.)

***566.** [*512] **Differential Diagnosis I. (3)**
(Also offered as Guid 512.)

***567.** [515] **Differential Diagnosis II. (3)**
(Also offered as Guid 515.)

***572.** [*481] **Teaching the Gifted Person.** [Education of the Gifted Child] **(3)**

***580. Practicum in Special Education. (3)**

***588.** [*574] **Organization and Supervision of Special Education Programs. (3)**

***591.** [*551-552] **Problems. (1-3 hrs. each semester)**
Prerequisite: permission of instructor.

***592.** [*529] **Workshops in Special Education. (1-4)**
Carries graduate credit when specifically approved by the Graduate School. Consult this catalog and the Graduate School Bulletin for degree restrictions. {Offered upon demand}

***593.** [*547] **Topics. (1-3)**
{Offered upon demand}

***595.** [*558-559] **Advanced Field Experience. (3-6, maximum of 12)**
{Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**

***630.** [534] **Clinical and Behavioral Aspects of the Emotionally Disturbed Child. (3)**

***640.** [576] **Clinical Aspects of Learning Disabilities.** [Diagnosis and Remediation of Learning Disabilities] **(3)**

***696.** [*610-611] **Internship. (3-6, maximum of 12)**

***699. Dissertation. (1-9 hrs. per semester)**

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

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, Spring}

****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)**
For non-engineers, 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. Electronics and Your World. (3)
Non-mathematical introduction to electronics and its interactions with the lives of individuals in the modern world. Topics include discussions of the basic operating principles involved in radio, television, the telephone, electronic musical instruments, computers, and the reproduction of sound (hi-fi, stereo, quadraphonic, etc.). Demonstrations will be provided where applicable. No prerequisites. {Offered upon demand}

****350. Transportation and Society. (3)**
For non-engineers, 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. {Spring}

****362. Information and Communication. (3)**
What is information? Can it be measured? This course will answer these two questions and will develop ways to measure the information content of messages and data. These techniques will be applied to problems of storage and retrieval of information, coding of messages, and communication capacity of various types of communication channels. {Offered upon demand}

370. Materials in Today's Environment. (3)
Modern-day devices and products from space vehicles to the tiniest transistor, from aluminum baseball bats to artificial hearts, owe their very existence to new materials. 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}

372. Chemical Technology. (3)
"Better things for better living . . . through chemistry." Examines critically the validity of this slogan. Life in the twentieth century has been influenced greatly by chemical technology: petroleum products, synthetic fibers, plastics, explosives, fertilizers, pesticides, and detergents. The societal impact of production, utilization, and disposal of these and other chemical products is discussed. {Offered upon demand}

****380. Applications to Nuclear Energy. (3)**
Designed to acquaint the non-technical student in the humanities with nuclear energy and its peaceful applications in many areas affecting human affairs. Includes atomic and nuclear structure, fission, fusion, nuclear reactors, nuclear explosives, accelerators, applications of radioisotopes, and socio-economic considerations. {Spring}

****382. Energy and the Environment. (3)**
For non-engineers on the subject of 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. No prerequisites. {Fall}

****385. Solar Energy Use. (3)**
Description of solar energy systems. Analysis of use of solar energy. Decision making and design processes for solar systems. History of solar use. {Fall}

390. Understanding Your Technological Environment. (3)
Operating principles, consumer economics, environmental impact, and safety for common technological devices. Typical topics: automobile, housing, recreational equipment, appliances. {Offered upon demand}

II. GENERAL COURSES FOR ENGINEERING MAJORS

101L. Introduction to Engineering. (4)
Description of engineering, design of new products by groups of students, and development of graphical, analytical, communicative and other engineering skills. 1 lecture, 6 hrs. lab. {Fall, Spring}

102L. 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. Corequisite: Math 162 or equivalent. {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, Spring}

III. COOPERATIVE EDUCATION PROGRAM

Students enrolled in the Cooperative Education Program (see p. 57) 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. [100] Cooperative Education Work Phase. (0)
$10.00 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

PROFESSORS R. L. Long, Ph.D. (Chairperson); C. Y. Cheng, Ph.D.; K. E. Cox, Ph.D.; G. A. Whan, Ph.D.; ASSISTANT PROFESSORS A. W. Cronenberg, Ph.D.; R. W. Mead, Ph.D.; H. E. Nuttall, Ph.D.; ADJUNCT PROFESSORS F. D. Jenkins, Ph.D.; R. K. Traeger, Ph.D.

CURRICULUM

See pp. 58-59.

251L. Chemical Calculations. (3)
Extensive problem work in the stoichiometric principles of chemistry, including composition changes, the material and energy balance, units and dimensions. 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. {Spring, Summer}

301. Thermodynamics. (3)
(Also offered as ME 301.) Principles of thermodynamics. First and second laws, properties, and equations of state. Prerequisites: Chem 101L, Physcs 161, Math 264. {Summer, Fall, Spring}

****302. Chemical Engineering Thermodynamics. (3)**
Continuation of 301 with application to chemical engineering processes; physical and chemical equilibria. {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. Prerequisite: 252. {Fall}

312. Unit Operations II. (3)
A continuation of 311. Problems in mass transfer, simultaneous mass and heat transfer, and related topics. Prerequisite: 311. {Spring}

314L. Chemical Engineering Laboratory I. (2)
Laboratory practice and experimental study of unit operations covered in 311. Corequisite: 311. 6 hrs. lab. {Fall}

315L. Chemical Engineering Laboratory II. (2)
Experimental laboratory study of the unit operations covered by 311 and 312. Prerequisite: 314L; corequisite: 312. 6 hrs. lab. {Spring}

****317. Computer Applications to Process Calculations. (3)**
Application of computer techniques to solve process problems, using various numerical methods; curve fitting, solution of differential equations for use in design of reactors, and solution of energy and material balances. Prerequisite: 252. {Spring}

****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, ME 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}

***413. 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. Prerequisite: 454L. {Offered upon demand}

***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}

***435. 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}

451-452. 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 the chemical engineer. {Fall, Spring}

***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: Math 316. {Fall}

****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. Prerequisites: 302, Math 316. {Fall}

***470. Materials for Energy Production. (3)**
(Also offered as Nucl E 470.) Fundamentals of materials selection and development for energy production in chemical, nuclear, geothermal, and solar systems. Recommended prerequisite: 370 or equivalent. {Offered upon demand}

***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}

481L-482L. Chemical Engineering Process Laboratory. (1, 2)
Senior research and development laboratory studies on chemical processes and products. {Fall, Spring}

***491-492. Special Topics in Chemical Engineering. (1-3, to a maximum of 6)‡**
Advanced studies in various areas of chemical engineering. {Fall, Spring}

****493L. Introduction to Design. (1)**
Introduction to principles used in chemical engineering design, including: process flowsheets, feasibility studies, equipment specification, and related topics. {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. Prerequisites: 312, 493L. 2 lectures, 2 hrs. lab. {Spring}

495. Chemical Engineering Honors Problem I. (1-6)
Senior thesis for students seeking departmental honors. {Summer, Fall}

496. Chemical Engineering Honors Problem II. (1-6)
Senior thesis for students seeking departmental honors. {Spring}

***501-502. Chemical Engineering Seminar. (1-3, 1-3)‡**
{Fall, Spring}

***521. Advanced Transport Phenomena I. (3)**
Prerequisite: 413 or equivalent. {Fall}

***522. Advanced Transport Phenomena II. (3)**
Prerequisite: 521 or equivalent. {Spring}

***523. Mass Transport Phenomena. [Equilibria and Staged Operations] (3)**
{Spring}

***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}

***551-552. Problems. (1-3 hrs. each semester)‡**

***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. Strengthening Mechanisms in Solids. (3)**
Recommended prerequisite: 571. {Offered upon demand}

***577. Phase Transformations in Solids. (3)**
Recommended prerequisite: 571. {Offered upon demand}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

ENGINEERING, CIVIL

PROFESSORS C. L. Hulsbos, Ph.D. (Chairperson); J. B. Carney, Jr., Ph.D.; R. H. Clough, Sc.D.; M. M. Cottrell, M.S.; W. R. Gafford, M.S.; R. L. Johnson, Jr., Ph.D.; J. E. Martinez, M.S.; G. E. Triandafilidis, Ph.D.; ASSOCIATE PROFESSORS R. L. Bleyl, Ph.D.; J. R. Matthews, Ph.D.; G. W. May, Ph.D.; G. A. Sears, Engr.; C. O. Varan, Ph.D.; ASSISTANT PROFESSOR J. E. Burkstaller, M.S.

CURRICULUM

See pp. 59-60.

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 Materials 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) May
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) Gafford
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. (3) Carney, Martinez, Matthews
The mechanics of incompressible and compressible flow; fluids at rest; geometry of fluid motion; general equations of motion; laminar and turbulent flow, boundary layer, lift, form drag; flow-through pipes, pipe systems, and open channels; laboratory study of basic principles of fluid mechanics. Prerequisite: 202; corequisite: ME 206L. 2 lectures, 3 hrs. lab. {Fall, Spring}

332. Water Resources and Hydraulic Engineering I. (3) Carney, Martinez
Pipe networks, open channel hydraulics, similitude, hydraulic machinery, water resources economics, basic aspects of hydrology. Prerequisite: 331L. {Fall, Spring}

336L. Sanitary Engineering I. (3) Burkstaller, Matthews
The principles of sanitary science as applied to the control of the environment, water supply and waste-water disposal, air and water pollution, and solid waste disposal. Prerequisites: 331L, Chem 102L. 2 lectures, 3 hrs. lab. {Fall, Spring}

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. {Fall}

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) Triandafilidis
Engineering properties of various soil deposits, soil classification, and testing methods, foundation design principles and field inspection. Prerequisite: CE 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. (2)
Administration, planning, geometric design, development, economics, operation, and social impact of transportation systems. Prerequisite: 282L. {Fall, Spring}

*401. **Advanced Mechanics of Materials.** (3) Johnson, May, Varan
(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 265. {Offered upon demand}

*403. **Linear Viscoelasticity.** (2) Cottrell, Albrecht
Viscoelastic models, beams, vibrations, waves, buckling; viscoelasticity in three-dimensional problems, applications. Prerequisite: 370 or permission of instructor. {Offered upon demand}

411. Reinforced Concrete Design. (3) Johnson
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) Johnson, May, Varan
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}

*416. [416L] **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}

§**417. **Structures Workshop I.** (2) Gafford
Advanced topics in structures for architecture majors. Prerequisite: permission of instructor. {Fall}

§**418. **Structures Workshop II.** (2) Gafford
Advanced topics in structures for architecture majors. Prerequisite: permission of instructor. {Spring}

§No credit allowed in College of Engineering.

*420. **Plastic Theory of Structures.** (3) Cottrell, Johnson, May
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) Cottrell
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) Carney, Martinez
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) Carney, Martinez
Hydrometeorology, soil moisture, runoff cycle, losses, overland flow, flood routing, runoff routing, ground water flow. Prerequisite: 332 or permission of instructor. {Fall 1977 and alternate years}

*432. **Water Resources and Hydraulic Engineering II.** (3) Carney, Martinez
Applied hydrology, hydraulics, water law, engineering economy, and water resources planning. Prerequisite: 332. {Fall 1977 and alternate years}

*436. **Sanitary Engineering II.** (3) Burkstaller, Matthews
Design of wastewater treatment plants using traditional design parameters and experimental design parameters. Population forecasting, plant hydraulics, stream sanitation, optimization analysis. Prerequisite: 336L. {Spring}

*437. **Water and Wastewater Analysis.** (3) Burkstaller, Matthews
Use of analytical methods to quantitatively define the character of water and wastewater. Water quality measurements applicable to the establishment of water and wastewater standards, design and control of treatment processes, and analysis of industrial waste. Prerequisite: 336L or permission of instructor. {Fall}

*438. **Public Health Engineering.** (3) Matthews
Theory and practice of environmental protection applied to water use, wastewater disposal, the air environment, solid waste management, vector control and ionizing radiation control. Prerequisite: permission of instructor. {Fall}

*450. **Introduction to Probabilistic Methods in Engineering.** (3) Bleyl
Applications of the theory of probability and statistics to engineering problems such as measurement errors, traffic flow, sanitary engineering, water resources, hydrology, construction management, yield and fracture strength of metals. Prerequisite: permission of instructor. {Fall}

*451. **Engineering Analysis.** (3) Cottrell
Methods of theoretical analysis of typical engineering systems. Applications of ordinary and partial differential equations, finite differences and matrices to solve engineering problems. Prerequisites: Math 316 or equivalent and permission of instructor. {Offered upon demand}

*452L. **Computer Applications in Civil Engineering.** (3) Bleyl
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 102L or EECS 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 102L or EECS 336, Math 316 or equivalent. {Offered upon demand}

*461. **Soil Engineering for Highways and Airfields.** (3) Carney, Clough
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.** [Engineering Foundations] (3) Carney, Clough, Triandafilidis
Application of principles of soil mechanics to analysis and design on footings, piles, caissons, cofferdams, and other substructures. Prerequisite: 360L. {Fall}

*463. **Intermediate Soil Mechanics.** (3) Carney, Clough, Triandafilidis
Soil-water relationships, shear strength, consolidation, introduction to physico-chemical properties of soils. Prerequisite: 360L. {Fall}

*464. **Rock Mechanics.** (3) Triandafilidis
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) Clough
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) Gafford
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) Clough
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) Clough, Sears
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) Martinez
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) Martinez
Principles of highway and airport pavement design. Prerequisite: 360L. {Spring}

*482. **Traffic Engineering.** (3) Bleyl
Introduction to the concepts and techniques of highway traffic engineering including traffic characteristics, studies, geometric design, regulations, control, planning, and environmental considerations. Prerequisite: 382. {Spring}

*483. **Traffic Engineering Studies and Characteristics.** (3) Bleyl
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}

*484. **Seminar in Transportation Engineering.** (2) Bleyl
Guest lecturers on contemporary problems and issues related to transportation engineering. {Spring}

490. **Professional Problems in Engineering.** (2)
Ethical and professional considerations in the engineer's relationship to other engineers, his clients, and society; contractual agreements common to engineering; professional economics. Prerequisite: senior standing in engineering. {Fall}

*491-492. **Special Topics in Civil Engineering.** (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) Johnson, May, Varan
Prerequisite: 415 or permission of instructor. {Spring}

*502. **Finite Element Methods in Solid Mechanics.** (3) Johnson
Prerequisite: 401 or permission of instructor. {Fall}

*505. **Advanced Reinforced Concrete.** (3) Hulsbos
Prerequisites: 306, 411. {Offered upon demand}

*506. **Prestressed Concrete.** (3) Hulsbos
Prerequisite: 411. {Spring 1978 and alternate years}

*507. **Design of Concrete Plates and Shells.** (3) Hulsbos
Prerequisite: 411. {Spring 1979 and alternate years}

*510. **Advanced Structural Design in Metals.** (3) Johnson, Varan
Prerequisite: 324L. {Offered upon demand}

*516. **Theory of Plates.** (3) Cottrell, May, Varan
Prerequisite: 401 or permission of instructor. {Offered upon demand}

*517. **Applied Discrete Mechanics.** [Discrete and Macro Mechanics] (3) Varan
Prerequisite: permission of instructor. {Offered upon demand}

*518. **Elastic Stability.** (3) Cottrell, Varan
Prerequisites: 401 or 402, Math 312, or permission of instructor. {Spring}

*519. **Theory of Shells.** (3) Cottrell, Varan
(Also offered as ME 542.) Prerequisites: ME 516 and Math 312. {Spring}

*520. **Vibration of Elastic Systems.** (3) Cottrell
Prerequisites: 421 or ME 414 and Math 312. {Offered upon demand}

*521. **Design of Structures for Dynamic Loads.** (3) Cottrell
Prerequisites: 415, 421 or ME 414. {Offered upon demand}

*523. **Random Vibrations.** (3) Cottrell
(Also offered as ME 523.) Prerequisite: 520 or permission of instructor. {Offered upon demand}

*531. **Advanced Water Treatment and Plant Design.** (3-4) Burkstaller, Matthews
Prerequisite: permission of instructor. {Offered upon demand}

*532. **Advanced Waste Water Treatment and Plant Design.** (3-4)
Prerequisite: permission of instructor. {Fall 1978 and alternate years}

*533. **Water Resources Engineering.** (3) Burkstaller
Prerequisite: permission of instructor. {Offered upon demand}

*534L. **Advanced Sanitary Lab.** (3)
Prerequisite: permission of instructor. 1 lecture, 6 hrs. lab. {Offered upon demand}

*535. **Open Channel Hydraulics.** (3) Carney, Martinez
Prerequisite: 332. {Offered upon demand}

*536. **Hydraulic Structures.** (3) Carney, Martinez
Prerequisite: 535. {Offered upon demand}

*551-552. **Problems.** (1-3 hrs. each semester)

*560. **Advanced Soil Mechanics.** (3) Carney, Clough, Triandafilidis
Prerequisites: 401 or 402, 463. {Offered upon demand}

*561L. **Advanced Soil Mechanics Laboratory.** (2) Carney, Clough
Corequisite: 463. 1 lecture, 3 hrs. lab. {Offered upon demand}

*562. **Foundation Engineering II.** [Advanced Foundation Engineering] (3) Carney, Clough, Triandafilidis
Prerequisite: 463. {Spring}

*563. **Earth Structures.** (3) Carney, Clough
Prerequisite: 463. {Spring}

*568. **Physico-Chemical Properties of Soils.** (3)
Prerequisite: 463. {Offered upon demand}

*572. **Construction Project Management.** (3) Clough, Sears
Prerequisite: permission of instructor. {Spring}

*581. **Highway Traffic Operations.** (3) Bleyl
Prerequisite: 382. {Fall}

*582. **Highway Traffic Design.** (3) Bleyl
Prerequisite: 483. {Spring}

*583. **Urban Transportation Planning.** (3) Bleyl
Prerequisite: 483. {Spring}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School 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) Triandafilidis
Prerequisites: 401 or 402, 463. {Offered upon demand}

*691-692. **Seminar.** (1-3 hrs. each semester)
{Fall, Spring}

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

COMPUTING AND INFORMATION SCIENCE

PROFESSORS S. Bell, Ph.D.; D. R. Morrison, Ph.D.; E. J. Gilbert, Ph.D.; ASSOCIATE PROFESSORS J. W. Ulrich, Ph.D.; N. Martin, Ph.D.; W. Hosken, Ph.D.; ASSISTANT PROFESSOR C. Crowley, Ph.D.

The following members of other departments also assist in the program. Department of Mathematics: C. Moler, Ph.D.; S. Pruess, Ph.D.; R. Allen, Ph.D.

CURRICULUM

105. **Survey of Computing.** (3)
Introduction to many of the basic ideas in computing, their history, applications, and impact on society. {Fall}

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. 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. Recommended for students pursuing a major or minor in computing science.

155. **Problem Solving with the Computer** (3)
(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 solving problems. A structured programming language will be learned. 3 lectures, 2 hrs. lab.

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. Structured programming in PL 360, a "high level" assembly language. Prerequisite: 155 or programming experience.

256. **Intermediate Programming.** (3)
A continuation of 155 which deals with large-scale problem formulation, recursive procedures, and data structures. Prerequisite: 155.

260. [160] **FORTRAN Programming.** (1)
An introduction to FORTRAN programming for ALGOLW programmers. Topics will include: translation of ALGOLW programs into FORTRAN; use of input/output facilities; other special features of FORTRAN. Prerequisites: 155, 255.

300. **Block-Structured Programming. (4)
Programming and problem solving in a block-structured programming language will be learned. Features include simple data structures and their implementation, recursive procedures, large program organization, file management. Students may not obtain credit for 300 and for 155/256. 3 lectures, 1 hr. lab.

*302. **The Design of Correct Programs.** (3) Gilbert
Introduction to the techniques of constructing reliable programs whose correctness can be demonstrated. The concurrent design of programs and of correctness proofs in a systematic manner, using the program verification methods developed by Dijkstra, Hoare, Naur, and Wirth. Prerequisites: 154, 256, and 300 or permission of instructor. {Spring}

*354. **What Computers Can and Cannot Do.** (3)
Exploration of the range of problems that computers can solve. Classical problems in solvability will be discussed using LISP as the metalanguage. Prerequisites: 154 and either 256 or 300. {Spring}

*355. **The Syntax and Semantics of Programming 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 phrase structure grammars. Prerequisites: 154 and 256 or 300.

*356. **The Syntax and Semantics of Programming Languages II.** (3)
A continuation of 355. Students will write an interpreter for a programming language; provides a detailed understanding of the relationship between phrase structure grammars and compiler construction. Prerequisite: 355.

*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: 154 and 255 or permission of instructor.

*358. **Computer Sorting.** (3)
This course offers an extensive explanation and analysis of all popular sorting techniques including those confined to internal

memory, using magnetic tapes, and with disk or drum auxiliary memories. Prerequisites: 256 or 300, Math 340.

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}

*401. **Modern Computer Architecture.** (3)
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. Prerequisite: 357 or permission of instructor.

*402. **Fundamentals of Algorithms.** [Analysis of Algorithms] (3)
Introduction to the techniques useful in the analysis of the efficiency of algorithms. Prerequisite: 302. {Spring}

*433. **Digital Computer Graphics and Communications.** (3)
(Also offered as EECS 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: EECS 335 or equivalent. {Fall}

*446. **Compiler Construction.** (3)
Provides a detailed understanding of the techniques used in the design and implementation of the compiler. The students will construct a compiler for a moderately complex programming language. Prerequisites: 255, 356.

*451. **Mathematical Theory of Formal Languages.** (3)

*452. **Simulation.** (3)
(Also offered as B&AS 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 B&AS 501 or knowledge of elementary probability and statistics and introductory calculus. {Spring}

*455. **Mathematical Logic.** (3)
(Also offered as Math 455.) 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 background in mathematics with a good intuitive feeling for what constitutes mathematical proofs. Prerequisite: permission of instructor.

*456. **Non-Standard and Higher Order Logic.** (3)
(Also offered as Math 456.) Intuitionistic logic and model theory, modal logics, minimal logics, classical theory of types, the Godel incompleteness theorem, Henkin's theory to types. Prerequisite: 455.

*457. **Principles of Artificially Intelligent Machines.** (3)
Survey of artificial intelligence exclusive of pattern recognition. Heuristic search techniques, game playing, introduction of mechanical theorem proving. Prerequisite: 256 or 300. {Offered upon demand}

*460. **Large-Scale Software.** (3)‡
The design and development of a large software system as a member of a programming team. Methods of top-down design, writing, and testing. Organization of a programming team. Prerequisites: consent of instructor, CIS 302, 355.

*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}

490. **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 major field of study. Prerequisite: permission of instructor. Course cannot apply to either minor or master's degree in CIS.

*499. **Individual Study.** (1-3 hrs. per semester)‡
Guided study, under the supervision of faculty member, of selected topics not covered in regular courses. Admission by approval of Division Director.

*500. **Foundations of Set Theory.** (3)
(Also offered as Math 500.) Prerequisites: 451, 455, 456. {Offered upon demand}

*502. [402] **Analysis of Algorithms.** (3)
An introduction to the study of the analysis of algorithms. Techniques for studying the stochastic properties of particular algorithms and how well they may be expected to perform. Prerequisites: Math 162, 163, 340.

551. **Individual Problem Solving.** (1-3 per semester, to a maximum of 6)
For individual work in areas not covered by regular University courses or seminars or for advanced study in a particular area. Prerequisite: permission of instructor.

*553. **Computer Evaluation of Mathematical Functions.** (3)
Prerequisites: 475-476 or equivalent, with permission of instructor. {Offered upon demand}

*554. **Mathematical Theory of Computation.** (3)
Prerequisite: 455. {Offered upon demand}

*555. **Data Structures.** (3)
Prerequisites: CIS 256 or 300 or equivalent, with permission of instructor. {Fall}

*556. **Introduction to Information Retrieval.** (3)
Prerequisite: 358, 555, or permission of instructor. {Spring}

*557. **Computational Mathematics.** (3)†
(Also offered as Math 557.) {Offered upon demand}

*558. **Mechanical Theorem Proving.** (3)
(Also offered as Math 558.) Prerequisite: mathematical logic. {Spring}

*559. **Topics in Computing.** (3 or 6)‡
Prerequisites: 12 semester hrs. credit toward master's degree and consent of instructor. {Offered upon demand}

591. **Special Topics.** (1-6)‡
Graduate seminar courses in special topics in computing science. Permission of instructor required.

*650. **Reading and Research.** (3)‡
Prerequisite: consent of instructor before registration. {Offered upon demand}

*677. **Pattern Recognition.** (3)
(Also offered as Math 677.) {Offered upon demand}

ENGINEERING, ELECTRICAL AND COMPUTER SCIENCE

PROFESSORS P. Dorato, D.E.E. (Chairperson); L. T. Boatwright, Ph.D.; V. W. Bolie, Ph.D.; M. D. Bradshaw, Ph.D.; W. J. Byatt, Ph.D.; A. Erteza, Ph.D.; W. W. Grannemann, Ph.D.; W. A. Gross, Ph.D.; S. Karni, Ph.D.; R. D. Kelly, Ph.D.; H. K. Knudsen, Ph.D.; A. H. Koschmann, Ph.D.; D. P. Petersen, D.Eng.Sc.; H. D. Southward, Ph.D.; R. H. Williams, Sc.D.; ASSOCIATE PROFESSORS R. A. Colclaser, Ph.D.; R. C. De Vries, Ph.D.; S. H. Gurbaxani, Ph.D.; D. Sparks, B.S.E.E., B.S.M.E.; ASSISTANT PROFESSORS J. M. Brayer, Ph.D.; J. T. Cordaro, Ph.D.; C. F. Hawkins, Ph.D.; D. A. Newman, Ph.D.; VISITING ASSISTANT PROFESSOR D. W. Williams, Ph.D.

CURRICULUM

See p. 61.

203. **Introduction to Electrical Engineering 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. Corequisite: Math 163. {Summer, Fall, Spring}

204. **Introduction to Electrical Engineering II.** (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)
Solution of engineering problems by experimental and analytic techniques. Corequisite: 203. 1 lecture, 3 hrs. lab. {Fall, Spring}

207L. Electrical Engineering Laboratory II. (2)
Prerequisite: 238; corequisite: 213. 1 lecture, 3 hrs. lab. {Summer, Fall, Spring}

213. Circuits and Systems I. (4)
Conceptual models of basic electrical components. Laws of circuit analysis. Detailed study of simple circuits and their signal processing capabilities. Introduction to signal decomposition. Prerequisites: C or better in 203, Math 316; corequisites: 207L, Math 264. {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 102, 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}

238. Computer Logic Design. [Digital Systems] **(3)**
Binary number systems. Boolean algebra. Combinational, sequential, and register transfer logic. Arithmetic/logic unit. Memories, computer organization. Input-output. Microprocessors. Prerequisite: some programming experience. {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}

313. Circuits and Systems II. (4)
General study of linear lumped time-invariant systems: differential equations, transfer functions, frequency response, state-variable description, introduction to analog and digital simulation. Prerequisite: C or better in 213. {Fall, Spring}

****321. Electronics I. (3)**
Fundamentals of electronic circuits, biasing, small-signal device models, feedback, and frequency response. Prerequisite: C or better in 213; corequisite 325L. {Fall, Spring}

****322. Electronics II. (3)**
Multistage amplifiers with feedback, operational amplifiers, large-signal models, digital electronic circuits. Applications. Prerequisite: C or better in 321; corequisite 326L. {Fall, Spring}

****325L. Electronics Laboratory I. (2)**
Prerequisite: 207L; corequisite: 321. 1 lecture, 3 hrs. lab. {Fall, Spring}

****326L. Electronics Laboratory II. (2)**
Continuation of 325L. Prerequisite: 325L; corequisite: 322. {Fall, Spring}

****335. Introduction to Digital Computers. (3)**
Computer organization; Boolean algebra; binary, octal, and decimal number systems; machine language instructions and programming techniques applied to the PDP-8 minicomputer. Intended for non-EECS 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 EECS 336 and Engr 102. Intended for non-EECS majors. {Offered upon demand}

****337. Minicomputer Systems.** [Introduction to Computer Science] **(3)**
Minicomputer architecture; addressing; instruction sets; assembly language programming; assemblers, loaders, and operating systems; programming experience using some simple data structures. Prerequisites: 207, 238. {Fall, Spring}

340. 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. Prerequisite: 313. {Fall, Spring}

361. Fields and Waves I. [Electromagnetic 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. Prerequisite: C or better in 213. {Fall, Spring}

362. Fields and Waves II. [Electromagnetic 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}

370. Physical Properties of Electrical Engineering Materials. (3)
Introduction to quantum mechanics and quantum statistics; conductivity in solids. Properties of semiconductors. Basic device models. Dielectric, magnetic, and optical properties of materials. Prerequisite: C or better in 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)**
(See Cp Sci 401.)

***405.** [407] **Modeling in Biomedical Engineering. (3)**
The application of engineering techniques to modeling of physiological systems. Prerequisites: Math 316 and permission of instructor. {Spring}

***406.** [404] **Biomedical Instrumentation. (3)**
Theory of physiologic measurements, transducer properties and electronics, bioelectrodes, electrical safety. Prerequisites: EECS 203, 405, or permission of instructor. {Spring}

***412. Analysis of Nonlinear Systems. (3)**
Characteristics of nonlinear devices: two-terminal and multiterminal; graphical and numerical analysis of resistive and dynamic nonlinear networks. Prerequisite: senior standing in EECS or permission of instructor. {Offered upon demand}

***415. Minicomputer Applications.** [Minicomputer Techniques and Applications] **(3)**
Basic operation, assembly language, and I/O are reviewed. Emphasis on the use of minicomputers in process control and signal processing. {Offered upon demand}

***418L. Analog and Hybrid Computer Techniques. (3)**
Advanced analog computations; basic concepts of hybrid computers; parallel hybrid computer techniques. Solution of practical engineering problems. Prerequisite: senior standing or permission of instructor. 2 lectures, 3 hrs. lab. {Offered upon demand}

***421. Electronics III. (3)**
Computer and waveforming circuits. Linear waveshaping, diode gates, large-signal 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: 322. {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}

***423. Analog Electronic Systems. (3)**
Electronic circuits and systems applied to the processing of analog signals. The analysis and design of the functional circuits of a communications system. Prerequisite: 322. {Fall}

***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: 322. {Spring}

***425L. Electronics Laboratory III. (2)**
Prerequisite: 326L; corequisite: 421 or 423. 1 lecture, 3 hrs. lab. {Fall}

***426L. Electronics Laboratory IV. (2)** Kelly
Continuation of 425L. Prerequisite: 425L; corequisite: 422. 1 lecture, 3 hrs. lab. {Spring}

***430. Computer Simulations of Continuous and Discrete Systems.** [Simulation Languages] **(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 EECS 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: EECS 336 or equivalent programming knowledge. {Fall}

***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: EECS 336 or equivalent programming knowledge. {Spring}

***433. Digital Computer Graphics and Communications. (3)**
(Also offered as Cp Sci 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: 335 or equivalent. {Fall}

***434L. Logic Design Laboratory. (2)**
Prerequisites: 207L, 238. {Fall}

***435. Design of Small Computer Software Systems.** [Introduction to Design of Assemblers] **(3)**
Data structures and the structured design of programs for building, searching, sorting, and modifying them; debugging, testing, monitoring, and evaluating these programs; reliability. 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 time-share operating systems, basic functions of the systems. The performance of operating systems is studied using a simulation model. Prerequisite: 337. {Spring}

***438. Logic Design. (3)** DeVries
Switching algebra; combinatorial circuits; fundamental-mode, pulse-mode, and clocked-sequential circuits; hazards; ROM and PLA designs. Prerequisite: senior standing. {Fall}

***439. Computer Methods in Engineering Analysis. (3)**
Methods of engineering analysis, with emphasis on numerical and computer solutions. Includes problem formulation, numerical methods, and programming for computer solution. Prerequisites: senior standing and knowledge of FORTRAN programming. {Offered upon demand}

***440. Systems of Computers.** [Digital Data Communications] **(3)**
Introduction to networks of computing resources. Allocation of resources to randomly occurring tasks; digital communication; system simulation and evaluation. Network design and management. Prerequisite: 437. {Fall}

***441. Introduction to Communication Systems. (3)**
Principal types of communication systems, including radar systems; amplitude, angle, and pulse modulation; noise; capacity of communication channels. Prerequisite: 313. {Offered upon demand}

***443L. Communications Laboratory I. (2)**
Corequisites: 441 and permission of instructor. 1 lecture, 3 hrs. lab. {Offered upon demand}

***444. Microprocessors. (3)**
Design of ROM controlled state machines, design and use of microprocessors, microcomputers. Applications, including design of I/O controllers. Prerequisites: 238 and knowledge of machine language programming. {Spring}

***446. Feedback Control Systems. (3)**
Principles of feedback. Analysis of steady-state and transient performance of electrical, mechanical, and other systems. Design of control systems for stability and specified static and dynamic characteristics. Prerequisite: 313. {Fall}

***448L. System Components Laboratory.** [Servomechanisms 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. Dynamic behavior of open- and closed-loop control systems. 2 lectures, 3 hrs. lab./week. Prerequisite: EECS 313. {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.** [Microwave Theory] **(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.** [Microwave Traveling Wave Laboratory] **(2)**
Measurements illustrating operational characteristics of microwave active and passive devices. Experiments with coherent light at I.R. and visible wavelengths. Holography. Corequisite: 462. 1 lecture, 3 hrs. lab. {Spring}

***471. Introduction to Semiconductor Devices.** [Device Physics and Models] **(3)**
Basic semiconductor physics, circuits and physical models of diodes, junction transistors, and field effect transistors. Prerequisite: 370. {Fall}

***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. Prerequisite: 322. {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: 370; corequisite: 421 or 423. {Fall}

***476L. Integrated Circuits Laboratory.** [Active Semiconductor Device Fabrication Laboratory] **(2)**
The design and fabrication of monolithic bipolar and MOS integrated circuits. Prerequisite: 370; 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. {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: EECS 480 or equivalent. {Spring}

***484. Electromechanical Energy Conversion. (3)**
Fundamentals of electro-mechanical energy conversion. Sychronous, induction, and D-C machines. Transformers. Motor control. Prerequisite: 361. {Fall}

490. Seminar in Laboratory Teaching Techniques. (1)
Prerequisites: senior standing and permission of instructor. {Offered upon demand}

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 the 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 hrs. each semester)‡**
Prerequisites: senior standing and permission of instructor.

***498. Seminar. (1-3)**
Prerequisites: senior standing and permission of instructor.

{Fall, Spring}

499. Seminar. (1-3)
Prerequisites: senior standing and permission of instructor. {Fall, Spring}

All courses following are understood to have the prerequisite of graduate standing in electrical engineering or permission of instructor.

***500. Theory of Linear Systems.** [Introduction to the Theory of Discrete Systems] **(3)**
Prerequisite: 400 or equivalent. {Fall}

***501. Methods of Analysis in Electrophysics.** [Introduction to the Theory of Continuous Systems] (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. {Offered upon demand}

***507. Methods of Operation Research II. (3)**
Prerequisite: 506 or equivalent or permission of instructor. {Offered upon demand}

***508. Bioelectric Phenomena. (3)**
Prerequisite: Math 316. {Fall}

***512. Modern Network Theory. (3)**
Prerequisite: permission of instructor. {Summer 1978 and alternate years}

***513. Modern Filter Theory and Design. (3)**
Prerequisite: 512 or permission of instructor. {Offered upon demand}

***515. Graph Theory and Applications. (3)**
Prerequisites: 400 or permission of instructor, programming knowledge. {Offered upon demand}

***516. Video Pattern Recognition. (3)**
Prerequisite: 415. {Spring 1978 and alternate years}

***531. Error-Correcting Codes. (3)**
Prerequisite: 438. {Fall 1977 and alternate years}

***532. Theory of Automata. (3)**
Prerequisite: 438. {Fall}

***533. Image Processing by Digital Computer. (3)**
Prerequisite: knowledge of Fourier analysis, linear system theory, and digital computers. {Offered upon demand}

***534. Symbol Manipulation and Heuristic Programming. (3)**
Prerequisites: 431, 432, or equivalent. {Offered upon demand}

***535. Principles of Threshold Logic. (3)**
Prerequisite: 438. {Offered upon demand}

***536. Advanced Logic Design. (3)**
Prerequisite: 438. {Fall}

***537. Formal Languages and Automata. (3)**
Prerequisite: 532. {Spring 1979 and alternate years}

***538. Design of Digital Systems. (3)**
Prerequisite:438. {Spring}

***539. Computer Methods of Signal Analysis I. (3)**
Prerequisites: knowledge of FORTRAN, advanced calculus, Laplace transforms. {Fall}

***541. Random Signal Processing. (3)**
Prerequisites: 400, 340 or equivalent. {Fall}

***542. Statistical Communication Theory. (3)**
Prerequisites: 400, 340 or equivalent. {Spring 1978 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)**
Prerequisite: graduate standing in mathematics, physics, physiology, or engineering. {Fall}

***548. System Modeling. (3)**
Prerequisite: 340, 500 or permission of instructor. {Spring 1979 and alternate years}

***551-552. Problems. (1-3 each semester)††**
{Offered upon demand}

***561. Electromagnetic Waves I. (3)**
Prerequisite: 362. {Fall}

***562. Electromagnetic Waves II. (3)**
Prerequisites: 501, 561. {Spring}

***570. Quantum Theory of Solids I. (3)**
Prerequisite: 370 or Physcs 330. {Offered upon demand}

***571. Quantum Theory of Solids II. (3)**
Prerequisite: 570. {Offered upon demand}

***572. Semiconductor Properties. (3)**
Prerequisite: 370; recommended pre- or corequisite: 471. {Fall}

***573. Magnetic and Dielectric Properties of Solids (3)**
Prerequisite: 570. {Offered upon demand}

***574L. Processing Techniques in Solid State Technology. (3)**
Pre- or corequisite: 471. {Offered upon demand}

***575. Theory of Solid State Devices. (3)**
Prerequisite: 471. {Spring}

***590. Seminar in Engineering Education. (1)**
Prerequisite: permission of instructor. {Offered upon demand}

***595, 596, 597. Special Topics. (1-3 hrs. each semester)‡**
Prerequisite: permission of instructor. {Summer, Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

***613. Nonlinear Systems. (3)**
Prerequisite: 500. {Offered upon demand}

***614. Modern Filters. (3)**
Prerequisite: 513. {Offered upon demand}

***635. Theory of Micro Programming. (3)**
Prerequisite: 538. {Offered upon demand}

***636. Decomposition Theory. (3)**
Prerequisite: 536 or permission of instructor. {Spring 1978 and alternate years}

***639. Computer Methods of Signal Analysis II. (3)**
Prerequisite: 539. {Spring 1979 and alternate years}

***641. Information Theory and Coding. (3)**
Prerequisite: 542. {Offered upon demand}

***643. Special Topics in Communication Theory. (3)**
{Spring 1979 and alternate years}

***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. {Spring 1978 and alternate years}

***651-652. Problems. (1-3 hrs. each 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. {Summer}

***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. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

ENGINEERING, MECHANICAL

PROFESSORS W. E. Baker, Ph.D. (Chairperson); B. Albrecht, Ph.D.; K. T. Feldman, Ph.D.; W. A. Gross, Ph.D. (Dean); A. V. Houghton, Ph.D.; Y. C. Hsu, Ph.D.; F. D. Ju, Ph.D.; C. G. Richards, Ph.D.; M. W. Wildin, Ph.D.; ASSOCIATE PROFESSORS A. O. Lebeck, Ph.D.; F. C. Wessling, Ph.D.; ASSISTANT PROFESSORS F. W. Chambers, Ph.D.; R. S. Passamaneck, Ph.D.; G. P. Starr, Ph.D.; VISITING ASSISTANT PROFESSORS T. A. Duffey, Ph.D.; J. S. Ebenezer, Ph.D.; PROFESSOR EMERITUS V. J. Skoglund, D. Eng.

CURRICULUM

See p. 62.

201L. Introduction to Engineering Design. (3)
Deals with elements of engineering design; conception, feasibility, analysis, engineering drawing, materials, manufacturing methods, and selection of components. These design elements are used in exercises in which students design, construct, and test simple devices. Students use shop and laboratory facilities. Creativity and the design process are emphasized. Corequisite: CE 202L. 2 lectures, 3 hrs. lab. {Fall, Spring}

206L. Dynamics. (3)
Principles of dynamics. Kinematics and kinetics of particles, systems of particles, and rigid bodies. Prerequisite: CE 202L; 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. {Fall}

301. Thermodynamics. (3)
(Also offered as ChE 301.) Principles of thermodynamics. First and second laws, properties and equations of state. Prerequisites: Chem 101L, Physcs 161, Math 265 or equivalent. {Summer, Fall, Spring}

****302. Thermochemistry and Gas Dynamics. (3)**
Thermodynamics of reactions and requirements of equilibrium. Isentropic flow, thermodynamics of shock waves, supersonic characteristics of internal and external flow. Prerequisites: 301, 317 or permission of instructor. {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}

****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}

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: ME 301, 317, 357, CE 302; prerequisite: EECS 203. 6 hrs lab. {Spring}

****320. Heat Transfer. (3)**
Principles and engineering applications of heat transfer by conduction, radiation, and free and forced convection. Prerequisites: 301, 317 or equivalents, at least one-half semester of ordinary differential equations. {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, Physcs 161, Chem 121L, or equivalents, and junior standing. {Fall}

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 for analysis of management decisions. Prerequisite: junior standing. {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}

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. {Offered upon demand}

357. Introduction to Mechanical Vibrations. (3)
Free and forced vibrations of one and two degree of freedom systems for both steady state and transient forcing. Also vibrations of selected continuous systems and balancing. Prerequisites: 206L and at least half a semester of ordinary differential equations. {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}

359L. Mechanical Engineering Design. (3)
Employs the methods and techniques of engineering design to design engineering systems, components, or products. Each student carries out a semester-long design project of his choice. Prerequisites: senior standing and permission of instructor. 1 lecture, 6 hrs. lab. {Offered upon demand}

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}

****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. {Offered upon demand}

367. Analysis for Building Energy Systems. (3)
Lectures on analysis for building energy systems such as thermodynamics, heat transfer, solar, and conventional energy use. Prerequisites: one semester of calculus, physics.

370. Engineering Materials Science. (3)
(Also offered as ChE and CE 370.) The structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics, and polymers. Corequisite: CE 302. {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. {Offered upon demand}

****382. [482] Energy Utilization and Conversion.** [Energy 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 magnetohydrodynamic 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 un-

symmetrical bending, curved beams, and elastic foundations; torsion of noncircular cross-sections; energy principles. Prerequisites: CE 302 and senior standing. {Offered upon demand}

*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. {Fall}

*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: 300, 301, and 320. {Spring}

451-452. **Undergraduate Problems. (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. {Offered upon demand}

*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.** [Seminar] **(1-3 hrs. per semester)**
Formal course work on special topics of current interest. Prerequisites: senior standing and permission of instructor. {Offered upon demand}

*480. **Analysis of Mechanical Control Systems.** (3)
Dynamic analysis and design of thermodynamic, hydraulic, and mechanical control systems; concept of feedback; performance and stability of systems. Prerequisites: 206L, 301, and 317; at least one-half semester of ordinary differential equations. {Offered upon demand}

*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)
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. {Spring}

*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. [*541] **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. {Offered upon demand}

*518L. **Principles of Measurement in Mechanical Engineering.** (3)
Prerequisites: 301, 317, 318, 357. 2 lectures, 3 hrs. lab. {Fall}

*520. [*506] **Advanced Thermodynamics I.** (3)
Prerequisites: 300 and 301. {Fall}

*522. [*501] **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. [*511] **Radiant Heat Transfer.** (3)
Prerequisite: 320. {Offered upon demand}

*525. **Solar Energy System Design and Analysis.** (3)
Prerequisites: 425, 500, and 501.

*530. [*503] **Applied Fluid Mechanics I.** [Advanced Fluid Mechanics I] (3)
Prerequisites: 206, 300, 301. {Spring}

*532. [*509] **Advanced Gas Dynamics.** (3)
Prerequisites: 522, 530. {Offered upon demand}

*534. [*510] **Boundary Layers.** (3)
Prerequisite: 530. {Offered upon demand}

*540. [*516] **Elasticity I.** (3)
Prerequisite: 300. {Fall}

*541. [*517] **Elasticity II.** (3)
Prerequisite: 540; corequisite: Math 313. {Offered upon demand}

*542. [*519] **Theory of Shells.** (3)
(Also offered as CE 519.) Prerequisites: 402, Math 312. {Offered upon demand}

*543. [*520] **Analysis of Thermal Stresses.** (3)
Prerequisite: 540. {Offered upon demand}

*548L. [*515L] **Experimental Stress Analysis.** (3)
Prerequisite: 518L. {Spring}

*551-552. **Problems. (1-3 hrs. each semester)**
Prerequisite: 6 hrs. of 500-level ME courses. {Offered upon demand}

*559. **Design Project.** (3)‡‡
Prerequisite: permission of instructor. {Offered upon demand}

*561-562. **Special Topics. (1-3 hrs. per semester)**
{Offered upon demand}

*591-592. **Seminar.** (1)
{Fall, Spring}

*599. **Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

*620. [*606] **Kinetic Theory and Statistical Mechanics.** (3)
Prerequisites: 520, Math 345. {Offered upon demand}

*622. [*605] **Convection.** (3)
Prerequisites: 522, 530. {Offered upon demand}

*630. [*603] **Theoretical Fluid Mechanics.** (3)
Prerequisites: 522, 530. {Offered upon demand}

*632. [*607] **Hypersonic Flow of Ideal Gases.** (3)
Prerequisites: 530, 532 or permission of instructor. {Offered upon demand}

*633. [*608] **Hypersonic Flow of Real Gases.** (3)
Prerequisites: 530, 532 or permission of instructor. {Offered upon demand}

*640. [*624] **Nonlinear Theory of Elasticity.** (3)
Prerequisite: 541. {Offered upon demand}

*642. [*671] **Mechanics of Inelastic Continuum.** (3)
Prerequisite: 540 or 530 or equivalent. {Offered upon demand}

*699. **Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

ENGINEERING, NUCLEAR

PROFESSORS R. L. Long, Ph.D. (Chairperson); G. A. Whan, Ph.D.; ASSOCIATE PROFESSOR S. E. Logan, Ph.D.; ASSISTANT PROFESSORS A. W. Cronenberg, Ph.D.; R. A. Knief, Ph.D.; ADJUNCT PROFESSORS R. M. Jefferson, M.B.A.; D. N. Payton, Ph.D.; L. D. Posey, Ph.D.

CURRICULUM

*420. **Fundamentals of Nuclear Engineering.** (3)
Radioactivity, nuclear reactions and cross-sections, conservation laws, elementary particles and particle distributions, neutron physics, and electromagnetic radiation. Recommended prerequisites: Physcs 330, Math 316. {Fall}

#*423L. **Radiation Measurements and Analysis.** (1-3)
The detection and analysis of charged particles, neutrons, and electromagnetic radiation. Experiments to demonstrate the properties of radiation, radioactive decay, cross-sections, detection, counting statistics, energy distributions, scattering, absorption, activation and safety monitoring. Prerequisite: 430 or Physcs 330. 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. {Fall, Spring}

*461. **Power Reactor Technology.** (3)
Technology of nuclear reactor systems. Emphasis on nuclear fuel cycle, system design interactions, and reactor thermal-hydraulic analysis. Prerequisites: 430, ME 320 or equivalent. {Offered upon demand}

*465. **Nuclear Power Systems.** (3)
Seminar on nuclear power systems with emphasis on independent study; safety analysis reports for light water, gas-cooled, and liquid metal fast breeder reactors; environmental impact statements; student selected topics. Prerequisite: 430 or equivalent. {Summer}

*466. **Nuclear Environmental Safety Analysis.** (3)
Radiation protection and safety; contributors to radiation environment; environmental monitoring; radioactive waste handling and disposal; guidelines, standard, and regulations; and the environmental impact statement. Prerequisite: 430 or equivalent. {Offered upon demand}

*470. **Materials for Energy Production.** (3)
(Also offered as ChE 470.) Fundamentals of materials selection and development for energy production in chemical, nuclear, geothermal, and solar systems. Recommended prerequisite: ChE 370 or equivalent. {Offered upon demand}

*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. {Offered upon demand}

*480. **Introduction to Controlled Fusion.** (3)
Basic theory of plasmas: orbit theory, magnetohydrodynamics, and transport phenomena. Science and technology of controlled fusion systems; conditions for thermonuclear reactions, formation and heating, containment, and characteristics of existing fusion systems. {Spring}

*485. **Controlled Thermonuclear Reactor Technology.** (3)
Introduction to controlled thermonuclear reactor (CTR) technology. (1) Systems: characteristics of proposed CTR systems; (2) system design: materials, scaling laws, plant cycle, economics, safety, shielding, blanket, magnets; (3) operation: start-up, operating mode, burnup, tritium cycle, control. Prerequisite: 420 or equivalent. {Offered upon demand}

491. **Undergraduate Problems.** (1-3)
{Summer, Fall, Spring}

*510-511. **Nuclear Reactor Theory I & II.** (3, 3)
Pre- or corequisites: 420, Math 312. {510—Fall, 511—Spring}

#*513-514L. **Nuclear Engineering Laboratory I & II.** (1-3, 1-3)
Prerequisites: 423L, 510, 511. 1 lecture, 6 hrs. lab. {513L—Fall, 514L offered upon demand}

*515. **Seminar.** (1-3)
{Offered upon demand}

*520. **Interaction of Radiation and Matter.** (3)
Prerequisites: 420, Math 312. {Offered upon demand}

*551-552. **Problems.** (1-3 hrs. each semester)

*560. **Reactor Kinetics and Control.** (3)
Prerequisites: 511 or 430 and permission of instructor; recommended: EECS 446. {Offered upon demand}

*570. **Materials for Nuclear Applications.** (3)
Recommended prerequisite: 470 or equivalent. {Offered upon demand}

*580. **Plasma Science and Technology.** (3)
{Offered upon demand}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*610. **Advanced Reactor Theory.** (3)
Prerequisite: 511. {Offered upon demand}

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

ENGINEERING TECHNOLOGY

The following courses are offered only at Los Alamos through the undergraduate center in support of the Engineering Technology Program.

132L. **Introduction to Engineering Technology.** (3)
Role of engineering technician, codes, standards, ethics, job prospects. Tours and field trips.

133L. **Measurements Laboratory.** (5)
Principles and instruments for measuring length, mass, force, time, temperature, pressure, and flow.

134L. **Drawing Interpretation.** (3)
Drawing techniques. Reading drawings. Symbology of electrical, hydraulic, pneumatic, welding, mechanical, and planning drawings.

135L. **Basic Electricity.** (4)
Electrical circuits, theory, basic components, and sources of power. Use of electrical test equipment.

142. **Mechanics.** (3)
Principles and applications of engineering mechanics. Corequisite: Math 150.

145L. **Machine Skills.** (4)
Shop skills and manufacturing processes. Bench tools, drill-press, lathe, milling machine, shaper, grinder, welder, precision measurements.

146L. **Instrumentation with Applied Electronics.** (5)
Power supplies, semi-conductors, transducers. Trouble shooting. Fabrication skills, instrumentation selection. Prerequisites: 133L, 135L.

161. **Introduction to Laser Technology.** (3)
General treatment of laser principles, laser types, energy levels, cavities, modes, power, spectrum holography. Demonstrations. Corequisite: Math 120.

162. **Optics.** (3)
Geometrical optics, wave theory, diffraction, polarization, dispersion, absorption, scattering, non-linear optics. 2 lectures and one 2-hr. lab. per week. Corequisite: Math 150.

232. **Heat.** (3)
Principles and applications of thermodynamics. Corequisite: Math 162.

233L. **Instrumentation with Applied Data Collection.** (5)
Transducer application and selection. Data recording. Prerequisite: 146L.

241L. **Instrumentation with Applied Control Systems.** (5)
Transducers, control systems, servo systems, signal transmission. Prerequisite: 233L.

244L. **Fabrication and Materials.** (3)
Properties and fabrication of metallic and plastic materials. Prerequisite: 145L.

261. **High Current and Voltage Technology.** (3)
Pulse forming, high voltage, and high current techniques, engineering and safety. 2 lectures, one 2-hr. lab. per week. Prerequisite: 161L.

262. **Advanced Electronic Circuits.** (3)
Device transient response, computing and wave forming circuits, large and small signal device models. 2 lectures, one 2-hr. lab. per week. Prerequisite: 146L.

263. **Laser Electro-optic.** (3)
Spectrum analysis, interferometers, etalons, laser modes, Q-switching, measurement techniques. 3 lectures. Prerequisite: 261.

264L. **Laser Application Lab.** (2)
Light interference, reflection, refraction, absorption, scattering, diffraction, polarization. Two 2-hr. labs per week. Prerequisite: maturity as indicated by lower courses in the LET program.

265. **Laser-Design Systems and Projects.** (3)
Design and construction of laser systems and devices on a project basis. 1 lecture, two 2-hr. labs per week. Prerequisite: maturity as indicated by lower courses in the LET program.

ENGLISH

ASSOCIATE PROFESSOR J. Zavadil, Ph.D. (Chairperson); PROFESSORS E. W. Baughman, Ph.D.; R. Fleming, Ph.D.; H. Hill, Ph.D.; ASSOCIATE PROFESSORS J. Barbour, Ph.D.; L. Z. Bloom, Ph.D.; P. B. Davis, Ph.D.; M. Eaves, Ph.D.; G. Frumkin, B.A.; P. Gallacher, Ph.D.; D. Johnson, Ph.D.; D. Jones, Ph.D.; J. Jones, Ph.D.; J. Kopp, Ph.D.; T. Mayer; D. McPherson,

#Registration for less than 3 credits only with approval of instructor.

Ph.D.; I. P. Melada, Ph.D.; R. Pickett, Ph.D.; M. Power, Ph.D.; D. Remley, Ph.D.; E. Spolsky, Ph.D.; J. Thorson, Ph.D.; F. B. Warner, Ph.D.; M. B. Whidden, Ph.D.; H. Witemeyer, Ph.D.; ASSISTANT PROFESSORS R. Anaya, M.A.; W. Dowling, Ph.D.; M. Fischer, Ph.D.; C. Fresch, Ph.D.; L. Silko; P. Smith, Ph.D.; M. Tillotson, Ph.D.; M. Weigle, Ph.D.; P. White, Ph.D.; INSTRUCTORS M. Hogan, Ph.D.; P. Page, Ph.D.; VISITING PROFESSOR L. Howard, Ph.D.; VISITING ASSISTANT PROFESSOR Harvena Richter, Ph.D.; new appointments to be made.

ENGLISH MAJOR

The English major requires 33 hours beyond 102. Each major program must include 290, 294, 295, and a 300-level course in two of the following three major authors: Chaucer (351), Shakespeare (352, 353), Milton (354). Of the remaining 18 hours, at least 9 must be at the 400 level and no more than 3 may be at the 200 level.

Students in the College of Arts and Sciences who plan to complete the English major and then teach English in secondary schools should study the information in "Certification to Teach in High School" on p. 53 of this 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 490 Senior Honors Thesis in their senior year.

CREATIVE WRITING MAJOR

The creative writing major in English requires a total of 33 hours: 27 hours in English and 6 hours in other creative areas (normally art, music, architecture, theatre arts, journalism, etc.). Of this total no more than 12 may be at the 200 level. In English every creative writing major must take 290, 6 hours in literature at the 300 level or above, and 15 hours in creative writing courses, including at least three at the 200 level. In the senior year a thesis for 3 hours of credit is also required. Students will be admitted to the creative writing major only after a review of a sampling of their work by a departmental committee.

MINOR STUDY

An English minor requires 18 hours of English courses numbered above 103. 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, 220, 221, or 222 and credit for Engl 102 before registering for a course numbered 270–296.

At least one course in literature numbered 270–296 is further required for admission to a literature course numbered 300 or above. An English major should meet this last prerequisite with Engl 290.

UNDERGRADUATE COURSES

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. {Fall, Spring}

101. Writing with Readings in Exposition. (3)
Expository writing and reading. {Summer, Fall, Spring}

102. Writing with Readings in Literature. (3)
Analytic writing and reading. Prerequisite: 101 or its equivalent. {Summer, Fall, Spring}

103. Fundamentals of English as a Second Language. (3)
Course in speaking, writing, and understanding English, designed for students to whom English is a second language. Engl 103 precedes, and is not a substitute for, Engl 101. {Fall, Spring}

210. Introduction to the Film. (3)
(See Film 210.)

220. Expository Writing. (3)
An intermediate course with emphasis on rhetorical types, structure, and style. Prerequisite: 101 or its equivalent. {Fall, Spring}

221. Creative Writing: Prose Fiction. (3)
A $4.00 workshop fee is required. Prerequisite: 101 or its equivalent. {Fall, Spring}

222. Creative Writing: Poetry. (3)
A $4.00 workshop fee is required. Prerequisite: 101 or its equivalent. {Fall, Spring}

223-224. The Big Questions. (3)
(Also offered as Comp Lit 223-224.) An introduction to literature as a humanistic study, with visiting lecturers from related areas of the humanities. The assignments will be grouped under major topics of importance to the everyday life of the individual ("Who Am I?," "What Is Love?," etc.).

270. Introduction to Literary Types: Novel, Poetry, Drama, or Other. (3)‡
Each section of this course will focus on one literary type. Titles of individual sections will vary as content varies. Prerequisite: 102 or its equivalent. {Fall, Spring}

280. Readings in Literature. (3)‡
Primarily for non-majors. Titles of individual sections will vary as content varies. Prerequisite: 102 or its equivalent. {Fall, Spring}

285. American Life and Thought. (3)
(See Am St 285.)

290. [250] 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}

294. Survey of Earlier English Literature. (3)
From Old English to 1798. Study of the principal literary and intellectual movements, and selected writers and literary works from Beowulf through Johnson. {Fall}

295. Survey of Later English Literature. (3)
From 1798 to present. Study of principal literary and intellectual movements, and selected writers and literary works. {Spring}

296. American Literature. (3)
A general survey to the present. Especially recommended for English majors. {Fall, Spring}

300. Studies in Literature. (3)‡
Literary works selected by theme or idea, genre or subgenre, or period. Titles of individual sections will vary as content varies. {Fall, Spring}

301-302. Interdepartmental Studies in the Culture of the U.S. (3, 3)
(See Am St 301-302.)

***303. English Phonetics. (3)**
(See Sp Comm 303.)

320. Technical Writing. (3)
Practice in the writing and editing of technical, engineering, and scientific reports and articles. Prerequisite: 220 or permission of instructor. {Fall, Spring}

321. Creative Writing: Short Fiction, Novel. (3)‡‡
Intermediate course with generally equal emphasis on writing and reading. A $4.00 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 $4.00 workshop fee is required. Prerequisite: 222 or permission of instructor.

***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.)

347. Introduction to Rhetorical Criticism. (3)
(See Sp Comm 347.)

351. Chaucer. (3)
{Fall, Spring}

352. Shakespeare: Histories and Comedies. (3)
{Fall, Spring}

353. Shakespeare: Tragedies. (3)
{Summer, Fall, Spring}

‡‡May be repeated once for credit.

354. Milton. (3)
{Fall, Spring}

360. Individual Authors. (3)‡
Study of a single author or of two or more authors. Titles of individual sections will vary as content varies. {Fall, Spring}

375. World Literature from Homer to Dante. (3)
Masterpieces of European and Asiatic literature, including the Bible. {Fall}

376. World Literature from Rabelais to Mann. (3)
Masterpieces of European literature. {Spring}

400. Literary Movements. (3)‡
Studies of major ideas, works, and figures that form a literary movement. Titles of individual sections will vary as content varies. {Spring}

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. {Fall}

***415. Old English. (3)**
Elementary grammar, translations of prose and poetry. {Fall}

***416. Old English Literature: Beowulf and Other Topics. (3)‡**
Prerequisite: 415 or permission of instructor. {Spring}

***421. Creative Writing: Workshop in Prose Fiction. (3)‡‡**
Advanced workshop devoted primarily to student writing. A $4.00 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 $4.00 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}

436. The Teaching of English. (3)
(See Sec Ed 436.)

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. {Fall, Spring}

***441. English Grammars. (3)**
Prerequisite: 440 or its equivalent. {Spring}

***445. History of the English Language. (3)**
Etymology, morphology, phonetics, and semantics of English; relation between linguistics and cultural change. {Fall, Spring}

452. The Middle Ages. (3)‡‡
Titles of individual sections will vary as content varies. {Spring}

453. The English Renaissance. (3)‡‡
Titles of individual sections will vary as content varies. {Fall}

454. Seventeenth-Century English Literature. (3)‡‡
Titles of individual sections will vary as content varies. {Fall}

455. Restoration and Eighteenth-Century Literature. (3)‡‡
Titles of individual sections will vary as content varies. {Fall}

456. English Romanticism. (3)
Titles of individual sections will vary as content varies. {Fall}

457. Victorian Literature. (3)
Titles of individual sections will vary as content varies. {Spring}

458. Modern British Literature. (3)
Titles of individual sections will vary as content varies. {Fall, Spring}

459. Irish Literature. (3)
Titles of individual sections will vary as content varies. {Fall, Spring}

***460. Colonial and Revolutionary American Literature. (3)**
Titles of individual sections will vary as content varies. {Fall}

461. American Romanticism. (3)
Titles of individual sections will vary as content varies. {Fall}

462. American Realism. (3)
Titles of individual sections will vary as content varies. {Spring}

463. Modern American Literature. (3)
Titles of individual sections will vary as content varies. {Fall, Spring}

***464. American Humor. (3)**
American humorists from 1830 to present. {Spring}

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. {Fall, Spring}

***475. Dante in Translation. (3)**
(See Italian 475.)

***480. Philosophy and Literature. (3)**
(See Eng-Phil 480.)

***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. {Fall}

485. Prose Fiction before 1800. (3)
Reading of major works of prose fiction written before 1800. Investigation of ways in which novel achieved generic form and the development of certain techniques. {Fall}

486. Prose Fiction of the Nineteenth Century. (3)
Reading of major works of prose fiction written since 1800. Emphasis will be upon the emergence of modern novel, refinement of techniques, central ideas. {Spring}

487. Studies in Genre: Comedy, Epic, Satire, Tragedy, etc. (3)‡
Study of best or of typical examples of any one genre. Structure and emphasis will vary. Titles of individual sections will vary as content varies. {Fall, Spring}

***488. Special Topics. (3)**

490. Senior Honors Thesis. [Senior Colloquium] **(3)**
Open only to students admitted to honors in English. To be taken in the semester when the senior thesis is completed. {Spring}

497. Individual Study. (1-3 hrs. per semester, to maximum of 6)
Permission of the instructor is required before registering. The student should present a plan of study to the instructor.

***499. Rhetorical Theory. (3)**
(See Sp Com 499.)

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}

***501. Interdepartmental Seminar in the Culture of the United States. (3)**
(See Am St 501.)

***510. Criticism. (3)**
{Spring}

***513. The Middle Ages. (3)‡‡**
{Fall}

***521. Creative Writing—Prose Fiction. (3)**
Prerequisite: 421 or permission of instructor.

***522. Creative Writing—Poetry. (3)**
Prerequisite: 422 or permission of instructor.

***523. The Renaissance. (3)‡‡**
{Fall}

***527. Studies in Rhetoric for Teachers. (3)**
(Also offered as Sec Ed 527.) {Fall}

***528. Studies in Reading and Literature for Teachers. (3)**
(Also offered as Sec Ed 528.) {Spring}

***533. The Seventeenth Century. (3)‡‡**
{Fall}

***537. Teaching Composition. (2)**
{Fall}

***538. Teaching Introductory Literature. (2)**
{Fall}

***543. The Eighteenth Century. (3)‡‡**
{Spring}

***551. Problems for the Master's Degree. (1-3 hrs. per semester)**

***553. The Nineteenth Century. (3)‡‡**
{Fall, Spring}

***560. American Literature. (3)‡‡**
{Spring}

***563. The Twentieth Century. (3)‡‡**
{Spring}

***573. Language (3)**
{Fall}

***575. Problems and Methods of Literary Study. (3)**
{Spring}

***580. Special Topics: History of Ideas, Literary Movements, etc. (3)‡**
{Fall}

‡‡May be repeated once for credit.

***587. Genre: Comedy, Epic, Satire, Tragedy, etc. (3)‡**

***590. Colloquium. (4)‡**
{Fall, Spring}

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

***600. Studies in American Literature. (4)‡**

***610. Studies in Criticism. (4)‡**

***620. Studies in British Literature. (4)‡**

***630. Studies in Language. (4)**

***640. Special Studies: Types, Backgrounds, Forces. (4)‡**

***651. Problems for the Doctor's Degree. (1-3 hrs. per semester)**

***652. Independent Study. (1-3 hrs. per semester, for maximum of two consecutive semesters)**
{Fall, Spring}

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

ENGLISH-PHILOSOPHY

The combined major in English and philosophy is an interdepartmental major administered jointly by the two departments. Students interested in this program should consult the English 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 and 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 recommended 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 to be numbered 300 or above.
2. 18 hours in philosophy courses, 12 of which are to be numbered 300 or above.
3. 6 hours additional of English or philosophy numbered 300 or above.
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}

490. Interdepartmental Proseminar. (3)‡
Open to juniors and seniors with the requisite grade-point average. See p. 66 for specific requirements. {Fall}

FRENCH

See Modern and Classical Languages.

GENERAL STUDIES

PROFESSOR John L. Howarth (Physics), Director; Jean Hedberg, Counselor-Lecturer (part-time).

General studies courses are offered in the General Honors and Undergraduate Seminar Programs, which are described on p. 30.

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. 118.

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 Honors 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 Studies 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}

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 15 students per class. Grading on A/CR/NC system. See p. 30.

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.

GEOGRAPHY

PROFESSORS R. E. Murphy, Ph.D. (Chairperson); I. Bennett, Ph.D.; R. D. Campbell, Ph.D.; R. E. Snead, Ph.D.; ASSOCIATE PROFESSORS E. M. Barrett, Ph.D.; S. A. Morain, Ph.D.; ASSISTANT PROFESSOR D. H. Gordon, M.A.; and new appointment to be made.

Explanation of footnotes not indicated will be found on p. 118.

MAJOR STUDY

A total of 34 hours in geography plus Geol 101. In addition to Geog 101, 102, and 380L, 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, 365, 367, 381, 393, 395, 475.

Regional geography—3 hours selected from courses numbered 301 to 337.

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:
261, 303, 352, 353, 361, 373, 405, 462, 471, 483, 491.
Recommended distributed minor to include:
Math 162, 163, 345, 346; Physcs 103, 160-161, 163L.

‡‡May be repeated for credit with permission of program director.

Environmental Systems
Recommended courses in geography:
261, 361, 373, 405, 471.
Recommended distributed minor:
Arch 101; B&AS 306; Econ 200, 201, one other three-hour course; Math 162, 163; Phil 356-357; Soc 101.

Geomorphology
Recommended courses in geography:
373, 405, 485.
Recommended minor in geology to include:
102, 105L, 106L, 455L, 462L, 482L.

Mathematical Geography
Recommended courses in geography:
261, 263, 361, 373, 405, 462.
Recommended distributed minor to include:
Math 102, 121, 122, 331-332.

Political Geography
Recommended courses in geography:
263, 333, 381, 475.
Recommended distributed minor:
Econ 200, 201, 424; Hist 101-102, 303, 336; Pol Sc 240, 351, 442.

Urban Geography
Recommended courses in geography
365, 405, 471.
Recommended distributed minor:
Arch 165, 181, 465; Econ 200, 201, 466; Hist 338; Pub Ad 421, 423; Soc 101, 351.

MINOR STUDY

Geog 101, 102, and 15 additional hours, including one of the following: 263, 351, 381.

GROUP REQUIREMENTS

Geog 481 is accepted as nonlaboratory science in fulfillment of the physical science (Group 4) requirement of the College of Arts and Sciences; all other geography courses except 380L are accepted toward fulfillment of the social science (Group 5) requirement in that College.

INTRODUCTORY COURSES

101. Physical Geography. [General 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. [General 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. {Summer, Fall, Spring}

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. {Spring}

263. Economic Resources. (3) Gordon
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}

REGIONAL GEOGRAPHY

***301. South America. (3)** Barrett
Discussion of the physical and cultural landscapes of South America, including settlement and patterns of resource use by aboriginal, colonial, and modern peoples. {Fall 1977 and alternate years}

***302. Mexico and the Caribbean.** [Middle America] **(3)** Barrett
Discussion of the physical and cultural landscapes of Mexico, Central America, and the islands of the Caribbean, including settlement and patterns of resource use by aboriginal, colonial, and modern peoples. {Fall 1978 and alternate years}

***303. North America. (3)** Bennett
Distribution in the United States and Canada of climate, landforms, soils, vegetation, population, economic activities, and other physical and human phenomena. The changing interrelations of these phenomena from one region to another is emphasized. {Spring}

***304. The Southwest.** [Southwestern United States] **(3)** Bennett
Distribution in the southwestern United States of climate, landforms, soils, vegetation, population, economic activities, and other physical and human phenomena. The changing interrelation of these phenomena from one area to another is emphasized. {Fall}

***330. Southeast Asia. (3)** Gordon
Spatial analysis of insular and peninsular Southeast Asia. Emphasis on the interdependent problems of economic development and nation-building. Thematic analysis of development potentials as influenced by colonialism, ethnic diversity and population change, and environmental resources. {Offered upon demand}

***331. East Asia. (3)** Gordon
Macro-spatial analysis of major patterns in China, Korea, and Japan. Examination of contrasting approaches to economic development. Case studies of agricultural systems, resource development potentials, urbanization, and population dynamics, industrialization, and cultural and environmental constraints. {Spring}

***332. Western Europe. (3)** Murphy
Regional geography of Europe from the Atlantic eastward through Finland, Germany, Austria, and Italy. A description, analysis, and synthesis in spatial association of the physical and human attributes of this area. {Fall 1977 and alternate years}

***333. The Soviet Union and Eastern Europe. (3)** Murphy
Regional geography of the U.S.S.R. and of eastern Europe from Poland southward through Czechoslovakia, Hungary, and the Balkans. A description, analysis, and synthesis in spatial association of the physical and human attributes of this area. {Fall 1978 and alternate years}

***336. The Middle East. (3)** Snead
Regional geography of southwestern Asia from Turkey through Afghanistan and southward to the tip of the Arabian Peninsula. Physical and cultural aspects are studied along with current economic and political problems. Numerous maps and slides. {Spring 1979 and alternate years}

***337. The Indian Subcontinent. (3)** Snead
Regional geography of south central Asia including India, Pakistan, Bangladesh, Nepal, Bhutan, and Sri Lanka. Physical and cultural aspects of this diverse region are studied along with current economic and human problems. Numerous maps and slides. {Fall 1977 and alternate years}

ADVANCED COURSES IN PHYSICAL GEOGRAPHY

***351. Systematic Climatology. (3)** Bennett
An analysis of factors affecting climatic variations and types, particularly solar and terrestrial radiation, temperature conditions, atmospheric pressure and wind patterns, and moisture and precipitation characteristics. Prerequisite: 101 or Physcs 103 or permission of instructor. {Fall}

***352. Regional Climatology. (3)** Bennett
The classification and world distribution of temperature regimes, air mass types, precipitation areas, and climatic regions. Prerequisite: 351 or 101 and permission of instructor. {Spring 1978 and alternate years}

***353. Microclimatology. (3)** Bennett
The study of heat exchange, temperature, moisture, and wind in air close to the ground in local areas. Analysis of the roles of vegetation, landforms, soils, water bodies, and urban structures in producing small-scale variations in limited locales. {Spring 1979 and alternate years}

***356. Biogeography. (3)** Morain
A review of major concepts and theories in historical biogeography including a discussion of the principles of population ecology and recent developments in numerical biogeography. Course work incorporates a broad outline of the regional patterns of plant and animal development. Prerequisite: 101 or Biol 121L or permission of instructor. {Spring 1978 and alternate years}

*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 will focus on processes of soil genesis, morphology and description, aspects of soil fertility, and man's impact on the soil resource. Prerequisite: 101. {Fall 1978 and alternate years}

*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 1979 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 482L or permission of instructor. {Spring 1978 and alternate years}

ADVANCED COURSES IN HUMAN GEOGRAPHY

*365. **Urban Geography.** (3) Staff
Urbanization as a spatial process. Evolution of the city through time. Types of cities, internal and external spatial relationships of cities and city systems. {Fall}

*367. **Transportation Geography.** (3) Staff
The impacts of transportation improvements, elementary transport economics, graph theory and network analysis, modeling spatial interaction, modal split, allocation models, and optimal network design. {Spring 1978 and alternate years}

*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}

*391. **Arid Lands.** (3) Staff
Human adaptation as a function of limited resources. Individuals and societies in the world's low and middle latitude dry lands. Problems and potentials of viable settlement in arid lands. {Offered upon demand}

*393. **Food Production Systems.** (3) Barrett
Systems which man has evolved to supply plant and animal food, emphasizing their relation to ecological conditions, cultural conditions, human nutrition, and human population. {Spring}

*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}

*472. **Conservation.** [Man-Environment Systems: Design] (3) Staff
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}

*475. **Psychological Geography.** [Systematic 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. {Fall}

ADVANCED COURSES IN GEOGRAPHICAL METHODOLOGY

*361. **Quantitative Methods in Geography.** (3) Staff
Use of probability theory and descriptive statistics in geographic applications, models, and theories. Prerequisite: college algebra. {Fall}

*373. **Map Reading and Air Photo Interpretation.** (3) Morain, Snead
Techniques of analysis of maps and aerial photographs for geographic study and research. Course also introduces remote sensing. Prerequisite: 101. {Fall}

*380L. **Cartography.** (4) Gordon
Introduction to cartographic theory and techniques and historical development of mapping. Methods of representing qualitative and quantitative data. Exercises in map design, data preparation and presentation, computer mapping, thematic mapping symbolization, and map projection principles. Prerequisite: 101 or permission of instructor. {Fall}

*401. **Geographic Writings and Analysis.** (3) Gordon
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}

*462. **Advanced Quantitative Methods in Geography.** (3) Staff
Nonstochastic mathematical techniques and spatial statistics for the analysis of locational structure. Prerequisite: 361 or permission of instructor. {Spring}

*464. **Location Theory.** (3) Staff
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. {Spring 1979 and alternate years}

*471. **Man-Environment Systems.** [Man-Environment: Evaluation] (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. {Spring}

*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. [*405] **Field Methods.** (3) Gordon
Training in collection of field data for geographic problems. Exercises in primary data collection and presentation using the Albuquerque area for data generation. Introduction to problem design, literature search and review, sampling, and hypothesis testing. Prerequisite: 380L or permission of instructor. {Spring 1978 and alternate years}

SEMINARS, WORKSHOPS, AND PROBLEMS

429. **Workshop in the Principles of Physical Geography. (4) Murphy
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}

430. **Workshop in the Principles of Human Geography. (4) Murphy
Fundamental aspects of human 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 hrs. each semester)** Staff
Supervised individual study and field work. {Summer, Fall, Spring}

*501. **Seminar in the History and Philosophy of Geography.** (3) Campbell
{Fall 1977 and alternate years}

*511. **Seminar in Physical Geography.** (3) Snead
{Fall 1977 and alternate years}

*512. **Seminar in Human Geography.** (3) Barrett, Campbell, Gordon, Murphy
{Spring}

*521. **Seminar in Regional Geography.** (3) Staff
{Fall 1978 and alternate years}

*551-552. **Problems.** **(1-3 hrs. each semester)** Staff

*555. **Inter-Disciplinary Seminar. Asia.** (3)
(Also offered as Hist, Pol Sc 555.) {Offered upon demand}

*571. **Seminar in Man-Environment Systems.** (3) Campbell
{Spring 1978 and alternate years}

*575. **Seminar in Psychological Geography.** (3) Campbell
{Spring 1979 and alternate years}

*582. **Seminar in Remote Sensing.** (3) Morain
{Fall 1978 and alternate years}

*599. **Master's Thesis.** **(1-6 hrs. per semester)**

GEOLOGY

PROFESSORS D. G. Brookins, Ph.D. (Chairperson); R. Y Anderson, Ph.D.; W. E. Elston, Ph.D.; J. P. Fitzsimmons, Ph.D.; K. Keil, Ph.D. (Director, Institute of Meteoritics); L. A. Woodward, Ph.D.; EMERITI PROFESSORS V. C. Kelley, Ph.D.; S. A Northrop, Ph.D.; S. A. Wengerd, Ph.D.; ASSOCIATE PROFESSORS G. R. Jiracek, Ph.D.; A. M. Kudo, Ph.D.; ASSISTANT PROFESSORS J. F. Callender, Ph.D.; R. C. Ewing, Ph.D.; R. V. Ingersoll, Ph.D.; B. S. Kues, Ph.D.; G. P. Landis, Ph.D.; S. G. Wells, Ph.D.; FACULTY ASSOCIATES E. C. Beaumont, M.S.; K. F. Mather, Ph.D.; J. W. Shomaker, M.S.; F. D. Gorham, M.S.; SENIOR RESEARCH ASSOCIATE G. J. Taylor, Ph.D. (Institute of Meteoritics).

Explanation of footnotes not indicated will be found on p. 118.

MAJOR STUDY

For the degree of Bachelor of Arts: Geol 101, 105L, 301L, 302L, 307L, 319L, 411L or 441L, 401, 490, and 6 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, 6 of which must be numbered above 200, in any one of the following departments: Anthropology, Biology, Chemistry, Geography, Mathematics, Physics, or any department in the College of Engineering.

For the degree of Bachelor of Science: Geol 101, 105L, 301L, 302L, 307L, 315L, 319L, 401, 420L, 421L, 422L, 441L, and 490, Chem 121L, 122L, Math 162, 163, 264, Physcs 160, 161, 262, and EECS 336. Geol 411L may be substituted for either Math 264 or Physcs 262. Geol 102 or 104 is strongly recommended for geology majors.

Students wishing to specialize in related fields such as paleontology may make limited substitutions in their program with the prior approval of the department chairperson.

Students completing the above 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. Eligibility is not limited to students in the College of Arts and Sciences.

MINOR STUDY

Geol 101, 105L, 301L, 302L or 307L, and 8 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 301L, Chem 122L is pre- or corequisite for Geol 302L, and Math 162 or instructor's permission is required for Geol 307L. No more than 2 hours of Geol 401 (Seminar) may be credited toward the minor.

MINOR STUDY IN PALEOECOLOGY

See p. 37.

101. Physical Geology. (3)
Materials composing the earth, and work of agencies, both external and internal, modifying its surface. {Summer, Fall, Spring}

102. Historical Geology. (3)
History of the earth; rise and succession of the various forms of life. Prerequisite: 101. {Spring}

103. Earth Resources and Man. (3) Brookins, Elston
Geologic occurrences of fuels and minerals and their influence on domestic and world affairs. Prerequisite: 101. {Summer, 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)
Fossils and paleogeographic maps; emphasis on the historical geology of New Mexico. Prerequisite: 105L; corequisite: 102. 2 hrs. lab. {Spring}

107L. Earth Resources and Man Laboratory. (1)
Ore specimens, exploration and utilization techniques; occasional field trips. Corequisite: 103. 2 hrs. lab. {Summer, Spring}

108L. Life on Earth Laboratory. (1)
Fossils and sedimentary rocks; field trips. Prerequisite: 105L; corequisite: 104. 2 hrs. lab. {Fall}

209. The Earth Environment. (3) Anderson, Kudo, Wells
(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}

225. Oceanography. (3) Jiracek, Kudo, Kues
The ocean as a physical feature and a dynamic process. {Summer, Spring}

****301L. Mineralogy. (4)** Ewing
Elementary crystallography; fundamentals of chemical and physical mineralogy; elements of mineral identification. Prerequisite: 105L; pre- or corequisite: Chem 121L. 2 lectures, 6 hrs. lab. {Fall}

****302L. Petrology. (4)** Kudo
Classification, hand-specimen identification, occurrence, and origin of rocks. Prerequisite: 301L; pre- or corequisite: Chem 122L. 3 lectures, 3 hrs. lab. {Spring}

****307L. Structural Geology. (4)** Callender
Nature and origin of rock structures and deformations; map and stereographic problems. Prerequisites: 105L, Math 162 or permission of instructor. 3 lectures, 3 hrs. lab. {Fall}

****315L. Physical Geochemistry. (4)** Landis
Thermodynamics and application to geologic systems; phase equilibria, phase rule, ideal and nonideal solutions. Prerequisites: 302L, Chem 122L, Math 163. 3 lectures, 3 hrs. lab. {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: 302L, 307L. 1 lecture and 1 full day in field each week. {Fall}

****333L. Environmental Geology. (3)** Wells, Anderson
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}

***401. Seminar. (1)††**
Current topics in geology. Prerequisites: 302L, 307L. {Fall, Spring}

***410. Fundamentals of Geochemistry. (3)** Brookins, Landis
Geochemistry of igneous, metamorphic, and sedimentary rocks. Geochemical methodology. Prerequisite: 302L. 3 lectures. {Spring}

***411L. Invertebrate Paleontology. (4)** Kues
General principles and familiarization with diagnostic features of fossils. Introduction to environmental implications. Prerequisite: 8 hrs. of geology or biology. 2 lectures, 6 hrs. lab. {Spring}

***412L. Index Fossils. (3)** Kues
Recognition and utilization of appropriate fossils in geochronology and paleogeography. Prerequisite: 319L or permission of instructor. 8 hrs. lab. {Spring}

***420L. Advanced Field Geology. (4)** Callender, Woodward
Geological mapping; special field problems. Prerequisite: 319L. 1 full day in field each week plus 1 hr. lecture during week. {Spring}

***421L. Optical Mineralogy. (4)** Fitzsimmons
Optical properties and microscopic determination of nonopaque minerals. Prerequisite: 301L or equivalent. 2 lectures, 6 hrs. lab. {Fall}

***422L. Petrography. (2)** Fitzsimmons
Study of rocks by means of the petrographic microscope, stressing mineral content, textural relations, and classification of rocks. Prerequisite: 421L; pre- or corequisite: 302L. 6 hrs. lab. {Spring}

***426L. Exploration Geophysics. (4)** Jiracek
Principles and applications of gravity, magnetic, seismic, electrical, and electromagnetic methods in subsurface exploration. Field investigations and interpretations. Prerequisites: 101, Math 163, Physcs 161. 3 lectures, 3 hrs. lab. {Fall}

***427. Solid Earth Geophysics. (3)** Jiracek
Structure, constitution, and deformation of earth as determined by gravity, magnetics, seismology, heat flow, and earth currents. Related aspects of plate tectonics. Prerequisites: 307L, Math 163, Physcs 161. {Spring}

***429L. Paleontological Techniques. (3)** Kues
Laboratory methods for the preparation of fossils for study and illustration. Prerequisite: 411L or equivalent. 6 hrs. lab. and field trips. {Fall}

***431L. Palynology-Micropaleontology. (4)** Anderson
Studies of the morphology, methods of identification, ecology and applications of pollen, spores, nannofossils, foraminifera and other microfossils. Prerequisite: 105L, some biology strongly recommended. 3 lectures, 3 hrs. lab. {Fall}

*441L. **Stratigraphy and Sedimentology.** (4) Ingersoll
Origin, dispersion, deposition, diagenesis, classification, and general distribution of sedimentary materials; principles of physical stratigraphy and biostratigraphy. Prerequisite: 302L. 3 lectures, 3 hrs. lab. {Fall}

*442. **Petroleum Geology.** (3)
Inductive approach to the principles of oil origin, migration, and accumulation. Characteristics of oil and gas reservoirs; techniques of petroleum exploration. Prerequisite: 441L or permission of instructor. {Spring 1977 and alternate years}

450. **Geology of New Mexico. (3) Callender
Description of geologic features including structures, landforms, and mineral resources of New Mexico. For earth science teachers at high schools and junior high schools. Prerequisite: 101. {Offered upon demand}

*455L. **Air Photogrammetry and Photogeology.** (3) Wells
Photogrammetric computations; stereoscopy; preparation of planimetric, topographic, and photogeologic maps. Prerequisites: 105L, Math 162, or permission of instructor. 1 lecture, 6 hrs. lab. {Spring 1977 and alternate years}

*462. **Hydrogeology.** (3) Wells
Occurrence of ground water with emphasis on water quality, terminology, and hydrologic properties of rocks. Prerequisites: 105L, senior standing, and permission of instructor. 3 lectures. {Spring 1978 and alternate years}

*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. Prerequisite: 101 or 102, or permission of instructor. Graduate geology majors must take 466L concurrently in order to obtain graduate credit for 465. {Spring 1978 and alternate years}

*466L. **Lunar and Planetary Geology Lab.** (1) Elston
Geologic interpretation of lunar and planetary photographs from terrestrial and space-probe sources, study of USGS lunar geologic maps, petrographic examination of meteorites, tektites, and terrestrial rocks subjected to shock metamorphism. Must be taken concurrently with 465. Prerequisites: 307L, 422L. 3 hrs. lab. {Spring 1978 and alternate years}

*471L. **Mineral Deposits.** (4) Elston, Landis
Origin, classification, occurrence, and exploration of mineral deposits. Prerequisites: 302L, 307L. 3 lectures, 3 hrs. lab. {Fall}

*472. **Quantitative Hydrogeology.** (2) Staff
Handling of quantitative hydrologic data needed for analysis of ground-water systems under induced stress. Prerequisite: 462. 2 lectures. {Offered upon demand}

*481. **Geomorphology.** (3) Wells
(Also offered as Geog 481.) Origin, development, and classification of land forms, with detailed consideration of gradation processes. Prerequisites: 105L and permission of instructor. {Fall 1977 and alternate years}

*482L. **Geomorphology of the United States.** (3) Fitzsimmons
Detailed study of the physiographic provinces and sections of the United States; emphasis on western United States. Prerequisite: 481 or permission of instructor. {Spring}

*483L. **Quantitative Geomorphology.** (3) Wells
Field investigations of geomorphic processes and landscape development with detailed consideration of fluvial, hillslope, alluvial fan and pediment systems. Emphasis on quantitative treatment of field data and application to environmental problems. 1 lecture, 4 hrs. lab. {Spring}

*487L. **Advanced Mineralogy.** (4) Ewing
Crystallographic principles; structure, chemistry, physical properties, and paragenesis of rock-forming minerals; determinative mineralogy by hand specimen, optical, and x-ray methods. Prerequisites: 301L, Chem 122L. 2 lectures, 6 hrs. lab. {Spring 1976 and alternate years}

*490. **Geologic Presentation.** (1) Ewing, Callender
Student reviews of geologic literature and critique. Prerequisite: senior standing. {Fall, Spring}

491-492. **Problems.** (2, 2)

493. **Independent Study.** (3) Staff
Independent study for departmental honors. Prerequisite: candidacy for honors in geology. {Offered upon demand}

495. **Senior Thesis.** (3)†
Prerequisite: candidacy for honors in geology. {Offered upon demand}

*501. **Sedimentary Geochemistry.** (3) Brookins
Pre- or corequisite: 302L. 3 lectures. {Fall 1978 and alternate years}

*502L. **High-temperature Geochemistry.** (3) Kudo
Pre- or corequisites: 302L or 422L, Chem 311-312 or Geol 315L. 2 lectures, 3 hrs. lab. {Spring 1978 and alternate years}

*504. **Geochronology.** (3) Brookins
Prerequisite: 302L; 315L recommended. {Fall 1977 and alternate years}

*505L. **Stable Isotope Geochemistry.** (3) Landis
Prerequisite: consent of instructor. {Spring 1978 and alternate years}

*506L. **Structure Analysis by X-ray Crystallography.** (4) Ewing
Prerequisites: Math 264 and permission of instructor. 2 lectures, 6 hrs. lab. {Spring 1977 and alternate years}

*510. **Advanced Mineral Deposits.** (3) Landis, Elston
Prerequisite: 471L. {Spring 1977 and alternate years}

*512L. **Petrography of Opaque Ores.** (3) Keil
Prerequisites: 421L, 471L. 1 lecture, 6 hrs. lab. {Spring 1978 and alternate years}

*513L. **Meteoritics and Cosmochemistry.** (3) Keil
Prerequisite: 422L or permission of instructor. 2 lectures, 3 hrs. lab. {Offered upon demand}

*516. **Selected Topics in Geomorphology.** (3) Wells
{Fall 1978 and alternate years}

*517L. **Instrumental Methods in Geochemistry.** (2-4)†‡ Keil, Landis
Prerequisite: permission of instructor. 1 or 2 lectures, 3 or 6 hrs. lab. {Offered upon demand}

*518L. **Microprobe Analysis.** (3) Keil
Prerequisite: permission of instructor. 2 lectures, 3 hrs. lab. {Offered upon demand}

*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) Callender
Prerequisite: 315L, 422L. 2 lectures, 3 hrs. lab. {Spring 1977 and alternate years}

*522. **Selected Topics in Geophysics.** (3) Jiracek
Prerequisite: permission of instructor.

*523. **Tectonics of Sedimentary Basins.** (3) Ingersoll
Prerequisites: 307L and 441L. {Spring 1979 and alternate years}

*525L. **Comparative Tectonics.** (3) Woodward
Prerequisite: 307L. 2 lectures, 3 hrs. lab. {Fall}

*527L. **Advanced Structural Geology.** (3) Callender
Prerequisites: 307L and either 426L or 427. 2 lectures, 3 hrs. lab. {Spring 1978 and alternate years}

*528. **Regional Tectonics.** (3) Woodward
{Spring 1978 and alternate years}

*531L. **Igneous Petrology.** (4) Kudo
Prerequisites: 421L and 422L or 302L. 3 lectures, 3 hrs. lab. {Fall}

*537L. **Stratigraphic Analysis.** (3) Staff
Prerequisites: 307L, 441L. 2 lectures, 3 hrs. lab. {Offered upon demand}

*539. **Environmental Reconstruction.** (3) Anderson
(Also offered as Paleoe 539.) Prerequisite: permission of instructor. {Spring}

*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 462L. 1 lecture, 6 hrs. lab. {Offered upon demand}

*544L. **Sedimentary Petrology.** (4)
Prerequisite: 422L. 2 lectures, 6 hrs. lab. {Spring 1978 and alternate years}

*547-548. **Seminar.** (3, 2)

*551-552. **Problems.** (2-3 hrs. each semester)

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

GERMAN

See Modern and Classical Languages.

GREEK

See Modern and Classical Languages.

GUIDANCE

See Education, Guidance and Special Education.

HEALTH, PHYSICAL EDUCATION, AND RECREATION

See Education, Health, Physical Education, and Recreation.

HISTORY

PROFESSORS G. D. Nash, Ph.D. (Chairperson); D. C. Cutter, Ph.D.; W. M. Dabney, Ph.D.; R. N. Ellis, Ph.D.; F. W. Iklé, Ph.D.; E. Lieuwen,[1] Ph.D.; M. S. Servín, Ph.D.; ASSOCIATE PROFESSORS P. J. Bakewell, Ph.D.; R. W. Kern, Ph.D.; P. R. Kolchin, Ph.D.; C. McClelland,[2] Ph.D.; J. Porter, Ph.D.; R. G. Robbins, Ph.D.; J. Roebuck, Ph.D.; D. E. Skabelund, Ph.D.; F. M. Szasz, Ph.D.; ASSISTANT PROFESSORS R. M. Berthold, Ph.D.; M. L. Conniff, Ph.D.; P. Ghosh, Ph.D.; S. P. Kramer, Ph.D.; N. H. Pugach, Ph.D.; H. N. Rabinowitz,[1] Ph.D.; M. J. Slaughter, Ph.D.; J. W. Spidle, Ph.D.; C. R. Steen, Ph.D.; D. D. Sullivan, Ph.D.; INSTRUCTORS J. T. Marrone, Ph.D.; W. G. Robertson, Ph.D.; and any new appointments to be made.

Explanation of footnotes not indicated will be found on p. 118.

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.

MINOR STUDY

The planned program outlined below is designed to supplement a student's work in his 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 requirement includes 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 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.

101-102. Western Civilization. (3, 3) Berthold, Kern, Kramer, Marrone, 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, Servín
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. {Fall, Spring}

110. [100] "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.

161-162. History of the United States. (3, 3) Dabney, Kolchin, Nash, Pugach, Rabinowitz, Robertson, Szasz
Survey of the economic, 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, Robertson, 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 score of 25 or higher. {Summer, Fall, Spring}

251. Traditional Eastern Civilizations. (3) Iklé, Porter
The origin and development of the traditional societies and cultures of Indian, Southeast Asia, China, and Japan. {Fall}

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. {Spring}

§260. History of New Mexico. (3)
Survey from Cabeza de Vaca to 1912. {Fall, Spring}

281. History of Colonial Latin America. (3) Bakewell
From 1492-1821. {Fall}

282. History of Latin America. (3) Conniff, Lieuwen
Emergence of national states from 1821 to the present. {Spring}

283. La Raza: A History of Mexican-Americans. (3)
An understanding of the Chicano in our society; the course is an examination of history and culture.

284. Afro-American History. (3)
(Also offered as Ed Fdn 284.) Survey of Afro-American history beginning with Africa and continuing to contemporary Black America.

***303. History of World Communism. (3)** Kern
From Marx to the present. {Spring}

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.

***308. Modern European Society.** [European Social History, 1848-1940] **(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) Kern, Kramer, Spidle
Development of historical thought and writing. {Summer, Fall, Spring}

***310. International Labor History. (3)** Kern
The history of labor in Europe, the United States, and Latin American 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. {Spring}

***311. The Ancient Near East. (3)** Berthold
Survey of the pre-Classical civilizations of the Near East from the birth of civilization to the Achaemenid Persian empire. {Fall}

***313. Greece. (3)** Berthold
Survey of the development of Greek civilization from the Bronze Age to the Hellenistic period; emphasis on political and social developments. {Fall}

***314. Rome. (3)** Berthold
Survey of the development of Roman civilization from the found-

§May be taught at Los Alamos or other off-campus centers.

ing of the city to the collapse of the Western empire; emphasis on political and social developments. {Spring}

*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 of women in the family and to their economic function as well as to the less common activities of saint, witch, and revolutionary. {Fall}

*316. **Women in the Modern World.** (3) Slaughter
Study of western women from preindustrial to contemporary society which will focus on Victorianism, familial roles, changes in work patterns, feminist movements, and female participation in fascist and revolutionary politics. {Spring}

*317. **History of Science to 1543.** (3) Skabelund
The history of science, mainly internal, from ancient Babylonia and Egypt through the European Renaissance. {Fall}

*318. **History of Science, 1543-1800.** (3) Skabelund
The history of science, mainly internal, during the Scientific Revolution of the sixteenth and seventeenth centuries and the eighteenth-century Enlightenment. {Spring}

*319. **History of Science, 1800 to the Present.** (3) Skabelund
History of science, mainly internal, during the "classical" period of the nineteenth century and the "second scientific revolution" of the twentieth. {Fall}

320. **Studies in History.** (1-3) Staff
Will vary from instructor to instructor, but will be an in-depth analysis of specific historical problems. For course content consult Schedule of Classes. {Fall, Spring}

*321. **Early Middle Ages, 300 to 1050.** (3) Sullivan
The emergence of medieval European civilization from the reign of Constantine to the beginnings of the papal monarchy. Prerequisite: 101. {Fall}

*322. **The Central Middle Ages, 1050-1300** (3) Sullivan
The maturing of medieval civilization: Gregorian reform, the Crusades, the rise of the university, and the Gothic cathedral. {Spring}

*323. **Renaissance Era, 1300 to 1520** (3) Sullivan
The decline of medieval civilization and the transition to a new phase of European history. {Fall}

*325. **Reformation Era, 1500-1600** (3) Sullivan
Religious revolution and concurrent developments in European politics, society, and culture.

*326. **History of the Occult and Irrational.** (3) Skabelund
Mystical traditions in Western history: the other side of rationalism, the "fossil" sciences, the preternatural—neglected episodes in Western civilizations. {Spring}

*327. [405] **Technical Factors in History.** [Social History of Science and Technology] (3) Skabelund
Picks up topics commonly omitted from other courses: the environmental, technological, and scientific factors in history, mostly Western, from antiquity to the present.

*329. **History of Christianity.** (3) Skabelund, Sullivan
The doctrinal, institutional, and biographical history of Christianity, from the first century to the present, seen in critical perspective.

*330. **History of the Women's Rights Movement.** (3) Slaughter
A detailed study of the movement for women's rights in the U.S. and in Europe in the nineteenth and twentieth centuries. The topical approach will emphasize the movement's relation to and impact on broader historical questions, e.g., feminism and socialism, feminism and World War I. Student involvement in discussion and project presentations is required. {Spring}

*331. **Europe in the Seventeenth Century.** (3) Steen
Survey of political, cultural, social, and economic trends in Europe during Thirty Years War and reign of Louis XIV. Special emphasis on developments in England, France, and Hapsburg dominions. {Fall}

*332. **Europe in the Eighteenth Century, 1700-1788.** (3) Steen
Survey of the political, cultural, social, and economic situation in Europe at height of Old Regime. Emphasis will be on intellectual and social developments that culminated in French Revolution. {Fall}

*333. **The French Revolution and Napoleon, 1789-1815.** (3) Steen
Survey of the course of the revolution and its impact on France and on European social, political, economic, and military life. {Spring}

*335. **Modern Europe, 1815 to 1914.** (3) Kern
Restorations and revolutions; national unification and industrialism; the "generation of materialism" and the origins of World War I. Prerequisite: 102. {Fall}

*336. **Europe since 1914.** (3) Kern, Roebuck
The World Wars and the search for peace; social and economic tensions; Europe in the era of the Cold War and the welfare state. Prerequisite: 102. {Spring}

*337. **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}

*338. **The City in History.** (3) Roebuck
(Also offered as Arch 338 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. {Fall}

*340. **Military History of Modern Europe.** [Military History of Europe since 1790] (3) McClelland
{Spring}

*341. **Medieval France to 1559.** (3) Steen
Study of the evolution of French social, political, and religious institutions from Roman time to outbreak of the Wars of Religion. {Fall}

*342. **France in Early Modern Times, 1560-1815.** (3) Steen
Study of creation of France as modern state with emphasis on social and political developments that led to French Revolution. {Spring}

*343. **History of England to 1688.** (3) Roebuck
Survey of medieval foundations, Tudor era, and seventeenth-century social and political revolutions. {Fall}

*344. **History of Modern England since 1688.** (3) Roebuck
Emphasis on social, political, and intellectual developments. {Spring}

*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. {Fall}

*346. **The History of Italy 1815-Present.** (3)
Covers response to Napoleon's fall, rise of a nationalist movement, successful unification of Italy (Risorgimento), problems facing the new state, the background of entrance into 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. {Spring}

*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. {Fall}

*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. {Spring}

*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. {Fall}

*352. **History of Japan.** (3) Iklé
Social, political, and economic institutions from historical beginnings to modern times. {Spring}

*353. **Southeast Asia.** [History of Southeast Asia, 1800 to the Present] (3) Ghosh, Iklé, Porter
Early civilizations, the impact of colonialism and nationalism to the present.

*356. **History of the Near East.** (3) Iklé
From ancient Mesopotamia to the present. {Fall}

*357. **History of Africa since 1800.** (3) Spidle
Survey of the African continent during colonial and national periods. {Spring}

*358. **Traditional India.** (3) Ghosh
Survey of Indian history and civilization from the historical beginnings to the Mughal period. {Fall}

*359. **Modern India.** (3) Ghosh
Survey of modern India from the rise of the Mughals to the present. {Spring}

*360. **History of New Mexico.** (3) Cutter, Ellis
Survey from Cabeza de Vaca to the present. {Fall, Spring}

*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. {Fall}

*362. **American Urban History since 1870.** (3) Rabinowitz
Continuation of 361, emphasizing the emergence, development, and role of the modern city. {Spring}

*363. **The Old South.** (3) Kolchin
Emphasis on the South in post-Revolutionary America, the transition to the South of the pre-Civil War era, slavery and antebellum southern society, and the mind of the Old South. {Spring}

*364. **Political History of the United States.** (3) Kolchin
From 1860 to the present. {Spring}

*366. **From Slavery to Freedom in Urban America.** (3) Rabinowitz
{Spring}

*367. **The New Republic, 1783-1820.** (3)
Study of the impact of the American Revolution on the post-war society, the creation of the new nation, crises of the 1790s, origin of modern political parties, Jeffersonian America, the War of 1812, and the movement westward.

*369. **American Indian History.** (3) Ellis
(Also offered as Anth 369.) Survey of American Indian history from white contact to the present. {Fall}

*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. {370—Fall; 371—Spring}

*373. **History of the American Frontier.** (3) Ellis
Anglo-American expansion from the seventeenth century to the 1890s. {Fall}

*374. **The Trans-Mississippi West.** (3) Ellis
{Spring}

*375. **Military History of the United States.** (3) Robertson
Introductory survey of military affairs in the United States from the Revolution to the present. {Spring}

*376-377. **Economic History of the United States.** (3, 3) Nash
Topical study of American economic life—agriculture, industry, labor, and commerce—stressing the relations of government and business. 376—from 1400 to 1860; 377—from 1860 to the present. {376—Fall; 377—Spring}

*378-379. **Constitutional History of the United States.** (3, 3) Dabney
378—from English origins to 1876; 379—from 1876 to the present. {378—Fall; 379—Spring}

*380. **History of the Southwest, Spanish Period.** [History of the Southwest] (3) Cutter
Spanish exploration and occupation of the Southwest; colonial government and missions. {Fall}

*381. **History of the Southwest, Mexican and American Period.** [History of the American Southwest] (3) Servin
Historical survey of the American Southwest covering the period from the first entrance of the Anglo-Americans during the Mexican era to the present. {Spring}

*384. **Inter-American Relations.** (3) Conniff, Lieuwen
Relations among the American republics from 1810, with emphasis upon the Pan-American movement and the recent period. 282 strongly recommended as a prerequisite. {Fall}

*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. {Spring}

*387. **Blacks in Latin America.** (3)
Survey of the history and assimilated culture of the black man in Latin America since colonial times. {Spring, Fall}

*393. **Spanish South America to 1820.** (3) Bakewell
Emphasis on Peru and on economic, social, and cultural aspects. {Spring}

*395. **Spain and Portugal to 1700.** (3) Kern
Spanish and Portuguese history to 1700. {Fall}

*396. **Spain and Portugal since 1700.** (3) Kern
Spanish and Portuguese history since 1700. {Spring}

*397. **Mexico to 1821.** (3) Bakewell
Prerequisite: 281. {Fall}

*398. **Mexico since 1821.** (3) Lieuwen
Prerequisite: 282. {Spring}

*401. **Quantification in History.** (2)
Introduction to statistical and quantitative procedures of particular use to historian and social scientist. Emphasis on practical application, not theory. No prior knowledge of statistics or higher mathematics needed. Course will begin with elementary procedures and go up to, but not through, use of computers. {Fall}

*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. {Fall, Spring}

*411. **Archival Administration for Historians.** (3) Jenkins
An introduction into the nature of archival administration, problems of archival work, and relations between archivists and historians. {Spring}

*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. {Spring}

*428. **European Intellectual History, Enlightenment to 1860.** [History of European Thought and Temper, 1760-1860] (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.** [History of European Thought and Temper, 1860-Present] (3) McClelland
The anti-positivist reaction; the decadent 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. Prerequisite: 102. {Fall}

*442. **Germany, 1871 to 1971.** (3) Spidle
Bismarck to Brandt, a survey of German history from unification to contemporary times, with special emphasis on Weimar and Hitlerian Germany. Prerequisite: 102. {Fall}

*443. **Modern Eastern Europe.** [Modern Eastern Asia] (3) McClelland, Robbins

*448. **The Spanish Empire.** (3)
A history of Spanish overseas empire from the time of Columbus to 1898 including exploration, exploitation, and international rivalry.

*450. [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. {Fall}

*451. [351] **Early Modern China.** [Modern China] (3) Porter
The development of early modern society and the impact of the West from the thirteenth to the twentieth century. {Spring}

*452. **Revolutionary China.** (3) Porter
Political, social, economic, and cultural history of China in the revolutionary period from 1911 to the present.

*454. [354] **Diplomatic History of East Asia.** [The Far East in the Contemporary World] (3) Iklé
Emphasis upon diplomatic relations between Asia and the West.

456. **Islam.** (3) Ghosh
A study of Islam—the faith—with major idealogical developments and its cultural growth and impact from the eighth century to the present.

*461. **The American Colonies, 1607 to 1763.** (3) Dabney
The settlement of British America and a study of American institutions in their infancy. Prerequisite: 161. {Fall}

*462. **The American Revolution, 1763-1789.** (3) Dabney

*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. Prerequisite: 161. {Fall}

*466. **The Civil War.** (3) Kolchin
Political, social, economic, military, and diplomatic history of the period 1860-1865. Prerequisite: 161. {Fall}

*467. **Reconstruction and the New Nationalism, 1863-1898.** (3) Kolchin
Prerequisite: 162. {Spring}

*468-469. **Recent History of the United States.** (3, 3) Nash
468—from 1898 to the time of the great depression; 469—from the time of the great depression to the present. Prerequisite: 162. {468—Fall; 469—Spring}

*470. **Philosophy of History.** (3)

(Also offered as Phil 470.) Nature, structure, and presuppositions of history and historical methods. {Spring}

*475. **American Culture and Society, 1607-1860.** (3) Szasz
{Fall}

*476. **American Culture and Society Since 1860.** (3) Szasz
{Spring}

*481. **The Modernization of South America.** (2-3) Lieuwen
Economic development, social change, and political crises since 1850. {Fall}

*482. **The Mexican Revolution.** (2-3) Lieuwen
Emphasis upon theory and interpretation. 3 hrs. credit with term paper. {Spring}

*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
Background to revolution since 1898; emphasis on period since 1959. {Spring}

*485. **Intellectual History of Latin America.** (3) Lieuwen
{Spring}

*486. **Southern South America.** (3) Conniff
Argentina, Chile, and Uruguay since 1810. Prerequisite: 282. {Spring}

*488. **The Andean Republics.** (3) Bakewell, Conniff
Peru, Bolivia, and Ecuador since 1810. Prerequisites: 282 and reading of the Spanish language. {Fall}

*489. **Brazil, 1500 to the Present.** [Brazil to 1822, Brazil since 1822] (3) Conniff
Prerequisite: 281. {Fall}

*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 requirements 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. {Fall, Spring}

Departmental requirements provide that the following seminars may be repeated only once.

*500. **Seminar in Historical Research Methods.** (2) Cutter, Nash, Porter, Szasz
{Fall, Spring}

*504. **Seminar in Ibero-American Studies.** (3)‡ Herron, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Ib-Am, Port, and Span 504.) {Fall, Spring}

*520. **Seminar and Studies in Ancient History.** (3) Berthold
{Spring}

*521. **Seminar and Studies in Medieval History.** (3) Sullivan
{Fall}

*526. **Seminar in European Economic History.** (3)
(Also offered as Econ 526.)

*532. **Seminar and Studies in Early Modern European History.** (3) Steen
{Fall}

*537. **Seminar in European Imperialism.** (3) Spidle

*540. **Seminar and Studies in European Intellectual History.** (3) Seitz
{Fall}

*542. **Seminar and Studies in Modern European History.** (3)
{Spring}

*545. **Seminar and Studies in British History.** (3) Roebuck
{Spring}

*547. **Seminar and Studies in Modern Russian History.** (3) Robbins
{Spring}

*548. **Seminar and Studies in Iberian History.** (3) Kern

549. **History Education. (3) Zepper
(Also offered as Sec Ed 549.) {Summer}

550. **Seminar in History Education. (3)
(Also offered as Sec Ed 550.) Prerequisite: 549. {Summer}

*551-552. **Problems.** (1-3 hrs. each semester)

*554. **Seminar and Studies in Far Eastern History.** (3) Iklé, Porter
{Spring}

*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. {Spring}

*563. **Seminar and Studies in U.S. Urban History.** (3) Rabinowitz

*564. **Seminar and Studies in American Intellectual and Social History.** (3) Szasz
{Fall}

*566. **Seminar and Studies in Civil War Period.** (3) Smith
{Spring}

*568. **Seminar and Studies in Recent American History.** (3) Nash
{Spring}

*570. **Seminar and Studies in United States Diplomatic History.** (3) Pugach
{Spring}

*573. **Seminar in American Western History.** (3) Ellis
{Spring}

*574. **Seminar in American Indian History.** (3) Ellis
{Spring}

*579. **Seminar in Southwest History.** (3) Cutter
{Fall, Spring}

*581. **Seminar in Colonial Latin American History.** (3)
{Spring}

*582. **Seminar in Recent Latin American History.** (3) Lieuwen
{Fall, Spring}

*584. **Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler, Schwerin
(Also offered as Anth, Econ, Pol Sc, and Soc 584.) {Spring}

*589. **Latin American History: National Period.** (3)
(Also offered as Ib-Am 504.) {Fall}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

HOME ECONOMICS

See Education, Home Economics.

IBERO-AMERICAN STUDIES

PROFESSOR M. R. Nason, Ph.D., Director.

Explanation of footnotes not indicated will be found on p. 118.

An interdepartmental program in the languages, literatures, and history of Spanish America and Brazil leading to the degree of Doctor of Philosophy. For details, consult the Graduate School Bulletin.

*504. **Seminar in Ibero-American Studies.** (3)‡ Bakewell, T. Holzapfel, Lieuwen, Nason, Tolman, Tomlins
(Also offered as Portuguese, Spanish 504, Hist 504 and 589.) {Fall, Spring}

*584. **Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3)‡ Lieuwen, Merkx, Needler, Schwerin
(See Anth, Econ, Hist, Pol Sc, and Soc 584.) {Spring}

*651-652. **Problems.** (1-3 hrs. per semester)

*699. **Dissertation.** (1-9 hrs. per semester) Cutter, T. Holzapfel, Lieuwen, Nason, Tolman, Tomlins, Ulibarrí
See the Graduate School Bulletin for total credit requirements.

INDUSTRIAL EDUCATION

See Education, Secondary.

ITALIAN

See Modern and Classical Languages.

‡‡May be repeated for credit once by history majors to fulfill field requirements.

JOURNALISM

ASSOCIATE PROFESSOR James P. Crow, Ph.D. (Chairperson); PROFESSORS A. G. Hillerman, M.A.; L. L. Jermain, M.S.; ASSOCIATE PROFESSOR C. Coates, B.A.; ASSISTANT PROFESSORS M. Hyman, M.S.; R. H. Lawrence, B.A.; S. Novins; LECTURERS L. Arquette, B.A.; E. McCrossen, B.A.; M. Toppino, B.A.

MAJOR STUDY

Advertising-Management sequence: 33 hours, including 251, 252, 277, 311, 312, 322, 401, 402.

News-editorial sequence: 33 hours, including 251, 252, 301, 311, 312, 322, 375, 475, 494.

Television-radio sequence: 33 hours, including 251, 252, 301, 322, 340, 341, 375, 470, 494.

MINOR STUDY

21 hours, including 251, 252, 311, 375.

100. Introduction to Mass Communication. (3)
The meaning of mass media in society, with emphasis on their processes and effects.

251. News Writing and Reporting I. (3) Staff
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. {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 training 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}

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) Jermain
American journalism from the pre-colonial beginnings through the developments to modern times. Prerequisite: permission of instructor. {Fall}

302. Persuasive Writing. (3) Hillerman
Writing of the editorial essay, the column, and other interpretive matters. Prerequisites: 252 and permission of instructor. {Spring}

311. Copy-Editing and Makeup I. (3) Crow
Practice in editing and assembling news copy, headline writing, typography and page makeup. Prerequisite: completion of 252 with grade of C or higher. {Fall, Spring}

312. Copy-Editing and Makeup II. (3) Jermain
Continuation of 311, with emphasis on wire copy, typography and newspaper design and analysis. Prerequisites: 311 and permission of instructor. 2 lectures, 2 hrs. lab. {Fall, Spring}

322. Law of the Press. (3) Jermain
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
Writing nonfiction for publication. Prerequisite: permission of instructor. {Fall, Spring}

340. News Programming I. (3) Coates
Writing for the air, with emphasis on radio reporting and documentary production. Includes practice in on-air delivery and use of tape recorders, editing and mixing facilities. Prerequisite: 251 with grade of C or higher. {Fall, Spring}

341. News Programming II. (3) Coates
Television news reporting and some program production. Includes practice in studio production and directing, shooting and writing to film and videotape. Prerequisite: 341 with grade of C or higher. {Fall, 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}

388. Cinematic Photography. (3)
(See Art St 388.)

399. Practicum in Journalism. (3) Coates, Crow
Supervised internship with a medium of mass communications. Prerequisites: permission of instructor and 9 hours of journalism, including 375 for print media, 340 for 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}

***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) Crow
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. Advanced News Programming. (3) Coates
Extension of 341, involving practical and theoretical considerations in broadcast news and public affairs programming. Prerequisite: 341 with grade of C or higher. {Spring}

475. Advanced Reporting. (3) Crow, Hillerman, Lawrence
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}

495. The Mass Media as a Social Force in Latin America. (3)
Taught only at the Quito Center, upon demand. {Spring}

***496. Individual Study. (1-3 per semester, to a maximum of 6)**

499. Public Affairs Seminar. [Undergraduate Seminar] (3) Novins
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

PROFESSOR M. C. Needler, Ph.D., Director; ASSISTANT PROFESSOR K. Remmer, Assistant Director; ASSOCIATED FACULTY P. K. Bock, K. H. Schwerin, R. A. Barrett, L. S. Cordell (Anthropology); M. E. Smith (Art History); R. A. Lenberg, L. G. Winter, J. A. Yeakel (Business); S. Cohen, P. Gregory, D. Tailby (Economics); E. M. Barrett (Geography); P. Bakewell, M. Conniff, D. C. Cutter, E. Lieuwen, R. W. Kern (History); D. Cvitanovic, W. H. Roberts, M. R. Nason, G. L. Brower, T. Holzapfel (Spanish-American Literature); J. Tolman, J. Tomlins (Brazilian Literature); G. Bills (Spanish Linguistics); M. C. Needler, J. L. Ray, K. Remmer (Political Science); P. David, G. W. Merkx, N. Valdes (Sociology).

This is an interdepartmental program administered by the Division of Inter-American Affairs. The program itself does not constitute professional training or prepare students for specific careers; however, it 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, Lat Am St 250, Hist 281-282, Pol Sc 355; (2) 6 hours chosen from Spanish 292, 357, and 358, Econ 421, Geog 301 and 302, Hist 384, 481, and 483, Soc 425, Anth 314 and 382, Pol Sc 356; (3) an additional 6 hours of any courses of Latin American content. An equivalent number of hours of approved courses should be substituted for courses being counted toward a second major in another department.

A listing and description of Latin American content courses currently being offered can be obtained from the Division Office.

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 an M.B.A., completing the entire program in five years. Details are available in the Division office or at the Anderson School of Business and Administrative Sciences.

MINOR STUDY

24 hours, including Spanish 301-302, Hist 281 and 282, Pol Sc 355 or 356, Lat Am St 250, 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 his major.

DISTRIBUTED MINOR FOR LATIN AMERICAN STUDIES MAJORS

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.

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, and discussion.

355. Latin American Politics and Society. (3) Needler
(Also offered as Soc and Pol Sc 355.)

498. Individual Reading and Research. (1-3)
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 hrs. each semester)

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler
(See Anth, Econ, Hist, Pol Sc, and Soc 584.)

***599. Master's Thesis.** (1-6 hrs. per semester)

LAW

PROFESSORS F. Hart, LL.M. (Dean); R. Desiderio, J.D.; W. Ellis, J.D.; M. Fink, LL.M.; G. Flickinger, J.D.; W. MacPherson, J.D., Director, Clinical Law Program; H. Muir, J.D.; L. Teitelbaum, LL.M.; A. Utton, M.A.; H. Weihofen, J.S.D. (Emeritus); ASSOCIATE PROFESSORS C. DuMars, J.D. (Visiting); J. Goldberg, LL.B.; R. Gonzales, J.D.; R. Kovnat, LL.B.; M. Norwood, J.D.; T. Parnall, J.D.; L. Romero, LL.M.; H. Simson, J.D.; ASSISTANT PROFESSORS J. Ellis, J.D.; J. Martinez, J.D.; P. Minzner, LL.B.; F. Ragsdale, J.D.; R. Schwartz, J.D.; LECTURERS IN LAW P. Winograd, LL.M. (Associate Dean); P. Deloria, J.D., Director, American Indian Law Center and Special Scholarship Program in Law; H. Kraus, J.D., Magistrate Prosecution Project; R. Montez, J.D., Centrolegál; J. Romero, J.D., Assistant District Attorney; STAFF ATTORNEYS T. Grossman, J.D., American Indian Law Center; J. Love, J.D., Institute of Public Law and Services; P. Lujan, J.D., Special Scholarship Program in Law for American Indians; G. O'Dowd, J.D., Director, Institute of Public Law and Services; A. Parker, J.D., American Indian Law Center; T. Sanchez, J.D., EEOC Litigation Project; T. Stiffarm, J.D., Deputy Director, American Indian Law Center; ADJUNCT LECTURERS IN LAW P. Biderman, J.D.; J. Cooney, J.D.; H. Hartz, J.D.; P. Long, Ph.D.; T. Popejoy, J.D.; W. Snead, J.D.; E. Walterscheid, J.D.; ADJUNCT UNM FACULTY L. Marquez, M.A.T.S.; P. Mori, M.B.A.

FIRST-YEAR COURSES

#500. Historical Introduction to the Legal System. (2)

#501. Constitutional Law I. (3)

#502. Contracts. (4)

504. Criminal Law. (3)

505. Law of International Relations. (2)

#508. Property I. (3)

#510. Torts. (4)

#513. Introduction to Advocacy I. (4)

#533. Family Law. (3)

575. Programmed Studies I. (2)

587. Introduction to Law. (3)

676. Programmed Studies II. (2)

NOTE: Some upperclass electives are available to freshman law students during the second semester.

SECOND- AND THIRD-YEAR COURSES

COMMERCIAL LAW

520. Business Associations I. (2-3)

521. Business Associations II. (3)

523. Commercial Transactions II. (2)

528. Creditors' Rights. (3)

550. Unfair Trade Practices. (2)

553. Products Liability. (2)

558. Contracts III. (3)

564. Law and the Consumer. (2)

581. Insurance. (3)

622. Commercial Transactions IA. (1)

623. Commercial Transactions IB. (2)

624. Commercial Transactions IC. (3)

629. Bankruptcy. (1-2)

PROCEDURE

512. Civil Procedure I. (3)

516. Civil Procedure II. (3)

517. Trial Practice. (2)

529. Criminal Procedure. (3)

531. Injunctions. (2)

532. Evidence. (3)

552. Federal Jurisdictions. (3)

561. Arbitration. (3)

563. National Moot Court Competition. (2)

606. Civil Procedure II. [Survey of Civil Procedure] (3)

607. Selected Problems in Civil Procedure. (2)

617. Trial Practice—Commercial Litigation. (3) Greenfield

631. Remedies. (2)

632. Trial Practice—Evidence. (5)

656. Trial Evidence. (2) MacPherson, Teitelbaum

PROPERTY AND NATURAL RESOURCES

524. Community Property. (2)

544. Oil and Gas. (3)

545. Estate Planning. (2)

547. Water Law. (2)

554. Wills and Future Interests. (3)

557. Wealth Devolution I. [Wills and Trusts] (1-3)

565. Natural Resources. (1-3)

574. Mining and Public Lands. (2)

578. Land Transfers and Finance. (3)

580. Environmental Law. (3)

608. Property II. (1-4)

609. Land Financing. (3) Flickinger

610. Landlord/Tenant. (1) Flickinger

616. Community Land Grants. (2) DuMars

619. Mining Law. (2)

625. Wills. (2)

627. Wealth Devolution II. [Future Interests] (3)

635. Land Use Planning. (2)

698. Advanced Real Estate Transactions. (3)

699. Wills Drafting. (2) T. Popejoy

PUBLIC LAW

515. Employees' Rights. (2)

518. Administrative Law. (3)

#Required.

525. Conflict of Laws. (3)
526. Constitutional Law II. (3)
535. Food and Drug Law. (2)
537. Labor Law. (2-3)
542. Legal Process. (3)
548. Legislation. (2)
611. Introduction to Legislation. (1)
628. Regulated Industries. (2)
655. First Amendment Rights: Use of Public Forums and Mass Media. (2)
691. Patent Law. (2)

TAXATION

530. Federal Estate and Gift Taxation. (2)
534. Federal Income Taxation. (3)
536. State and Local Taxation. (1)
551. Taxation of Corporations and Shareholders. (3)
620. Taxation of Partnerships, Estates, and Trusts. (2)
621. Taxation of Natural Resources Transactions. (2)

LAW AND SOCIAL PROBLEMS
(See Seminars also.)

555. Jurisprudence. (2)
566. Law and the Behavioral Sciences. (3)
570. Law of the Poor. (2)
579. Juvenile Courts and Juvenile Delinquency. (2)
584. Indian Law. (2)
664. Poverty Law. (2-3)

PROFESSIONAL SKILLS AND FUNCTIONS

538-539. Law Journal and Review (Second Year). (1-2, 1-2)
568-569. Law Journal and Review (Third Year). (1-2, 1-2)
572. The Legal Profession. (2)
600. Role of the Lawyer in Society. (2)
681. Client Counseling Competition. (1) Parnall

SEMINARS

527. Business Planning. (3)
546. Antitrust Law. (2)
549. Comparative Law. (2)
556. State and Local Government. (2)
560. Women and the Law. (2)
567. Legal Problems in Community Economic Development. (2)
571. Law and Psychiatry. (2)
576. Current Legal Problems. (2)
577. Legal Counseling. (2)
582. The Corporation and Society. (2)
583. International Legal Problems. (2)
590. Commercial Law. (2)
592. Legal Education. (1)
593. Private Law Reform. (2)
594. Individual Research. (1-6)
595. Tax Policy. (2)
615. Corrections. (2)
630. Rights of Children. (2) Ellis
633. EEOC. (2) Jones
637. Labor Law. (2) Reynoso
640. Applied Problems in Current Litigation. (2)
645. Sex Roles in the Law. (2)
650. Pornography and the Law. (2)
660. Juvenile Law and Practice. [Juvenile Courts] (2)
663. Mental Health Law. (2) Simson
665. The Grand Jury and White Collar Crimes. (2) Hartz
666. Advanced Problems in Federal Litigation. (2)
670. Development of Legal Institutions. (2) Ragsdale
677. Equal Employment Litigation. (2) Jones
678. Corporate Finance. (2) Wellborn
679. Comparative Criminal Theory. (2) Ragsdale
680. Natural Resources Policy. (2) Ellis
684. Problems in Indian Law. (2) Ragsdale
686. Idea of the Legal System. (2) Long
690. Law and Medicine. (2)
692. Introduction to the American Jury System. (2)
694. Public Utilities. (2) Graham
695. Recent Legal Developments Affecting Minorities. (2)
697. Criminal Law. (2) Romero

CLINICAL LAW PROGRAM

700. Criminal Practice Clinic. (3)
701. Spanish for Lawyers. (2)
702. Clinical Phase I. (1)
708. Practical Problems I. (1)
709. Practical Problems II. (1-4)
710. Pre-Trial Practice. (2)
711. Accounting for Lawyers. (1)
712. Human Behavior. (1)
713. Trial Practice. (3)
714. Law Office Management. (1)
715. Interviewing and Counseling. (2)
716. Appellate Practice. (1)
717. Jurimetrics. (1)
718. Negotiation. (1)
719. Prisoner Services. (3)
720. Law Office and Public Defender. (3)
721. Law Office Intern. (3)
722. Legal Aid. (2)
723. District Attorney. (3)
724. District Judge Intern. (2)
725. Field Experience. (3)
726. U.S. Public Defender. (3)
727. JAG. (3)
728. Women's Legal Services. (3)
729. U.S. Attorney. (3)
730. City Attorney. (3)
731. Centrolegál. (3)
732. USDA Solicitor. (3)
733. NMCLU. (3)
734. Welfare Litigation. (3)
735. Basic Skills. (1)
736. Legal Rights of the Mentally Handicapped. (3)
737. EEOC. (3)
738. Juvenile Rights. (3) Teitelbaum
739. State Public Defender. (3) MacPherson
740. Clinical Half Semester. (6)
747. EEOC Intern. (3) Gonzales, Sanchez
750. Ethics. (2)
751. Advanced Spanish for Lawyers. (2)

LINGUISTICS

ASSOCIATE PROFESSOR G. Bills, Ph.D. (Chairperson); PROFESSORS F. Chreist, Ph.D. (Communicative Disorders); V. John-Steiner, Ph.D.; B. Spolsky, Ph.D.; M. Zintz, Ph.D. (Elementary Education); ASSOCIATE PROFESSORS D. Brodkey, Ed.D. (Elementary Education); J. Oller, Ph.D.; R. Pickett, Ph.D. (English); R. White, Ph.D. (Secondary Education); ASSISTANT PROFESSORS C. Conrad, Ph.D. (Psychology); L. Gorbet, Ph.D.; A. Hudson, Ph.D.; R. Young, Ph.D.; PROFESSOR OF NAVAJO LINGUISTICS R. W. Young, LL.D.

MAJOR IN THE COLLEGE OF ARTS AND SCIENCES

The major for the B.A. in Linguistics requires a minimum of 36 hours (21 in required courses, 15 in approved electives) and four semesters of a foreign language or the equivalent. Required courses are: Ling 292L, 303, 317, 318, 417, 418, 470. The 15 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, Sec Ed 430, 442, Engl 436, French 405, 440, German 405, 445, Navajo 401, Spanish 340, 341, 342, 441, Phil 352, 356, 357, 445, Psych 463, 467, Sp Com 323, 350, 421, 423.

MINOR IN THE COLLEGE OF ARTS AND SCIENCES

The minor requires at least 21 hours of linguistics courses: 292L, 303, 317, 318, 470, and 6 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. [100] **Introduction to the Study of Language.** (3) Bills, Oller, Spolsky
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}

°**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. [292] **Introduction to Linguistic Analysis.** [Introduction to Linguistics] (3) Bills, Hudson, Oller
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.** [Phonetics] (3) Chreist
(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.** [317L] **Phonological Analysis.** (3) Gorbet, Hudson
(Also offered as Anth 317.) Phonetic principles and phonological theory, descriptive analysis of phonological systems, transcriptional practice and problems from selected languages. Prerequsite: 292L. {Fall}

***318.** [318L] **Grammatical Analysis.** (3) Bills, Hudson
(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.** [459] **Language in Society.** [Language and Society] (3) Hudson
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. {Fall}

***353.** [386] **Bilingual Education: History and Theory.** [Survey of Multilingual Education] (3) Spolsky
Survey of multilingual education throughout the world; principles and practices. Prerequisite: an introductory linguistics course. {Spring}

***359. Language and Culture.** (3) Gorbet, Rushforth
(See Anth 359.) Prerequisite: an introductory linguistics course. {Fall}

***362. Language Testing.** [Language Testing and Multilingual Education] (3) Oller
Survey of language testing procedures with special applications in multilingual and bilingual education programs. Prerequisite: an introductory linguistics course; some knowledge of statistics recommended. {Spring}

***367. Introduction to Psycholinguistics.** (3) Conrad
(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.

***405. North American Indian Languages.** (3) Gorbet
(See Anth 405.) Prerequisite: 292L or 317 or 318. {Spring 1979}

***410. Topics in Anthropological Linguistics.** (3)‡
(See Anth 410.)

***413.** [313L] **Linguistic Field Methods.** (3) Gorbet
(See Anth 413.) Prerequisites: 317 and permission of instructor. {Spring 1978}

***417.** [417L] **Phonological Theory.** [Advanced Phonological Analysis] (3) Gorbet
(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.** [418L] **Grammatical Theory.** [Advanced Grammatical Analysis] (3) Gorbet, Oller
(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) Hudson, 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) 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. {Spring 1979}

***451. Mathematical Theory of Formal Languages.** (3)
(See Cp Sci 451.)

***452. Sociolinguistic Stratification.** (3) Hudson
Linguistic variability in relation to social status and situational context; attitudinal correlates of language stratification and sociolinguistic change in progress. Prerequisite: 351. {Spring 1979}

***453. Societal Bilingualism.** (3) Hudson
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. {Spring 1978}

***470.** [370] **History of Linguistics.** (3) Hudson, 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 1978}

***480. Second Language Pedagogy.** (3)
(See Sec Ed 480 and M Lang 480.)

***482. Teaching English as a Second Language.** (3) Brodkey, White Zintz
(See El Ed 482 and Sec Ed 482.) Pre- or corequisite: 292L or 440 and permission of instructor. {Fall, Spring}

***490.** [497] **Topics in Linguistics.** [Topics] (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. Seminar: Anthropological Linguistics.** (3)‡
(See Anth 510.)

***552. Seminar in Multilingual Education.** (3)‡ Spolsky
Prerequisite: 353. {Fall 1977}

***554. Seminar in Linguistic Theory.** (3)‡
(Also offered as Anth 554.) {Fall 1978}

***555. Seminar in Educational Linguistics.** [Seminar in Linguistics and Language Pedagogy] (1-3)‡
(Also offered as Ed Fdn 555.) {Offered upon demand}

***559. Seminar in Sociolinguistics.** (3)‡ Hudson
{Fall 1978}

***562. Seminar in Language Testing.** (3) Oller
(Also offered as Ed Fdn 562.) {Fall 1977}

***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 Semantics.** (3)‡ Conrad
(Also offered as Psych 569.) Prerequisite: permission of instructor.

*Normally offered through Continuing Education only.

***595. Graduate Problems. (1-6 hrs. per semester)**
Prerequisite: permission of instructor.

***599. Master's Thesis. (1-6 hrs. per semester)**

MATHEMATICS AND STATISTICS

PROFESSORS R. Griego, Ph.D. (Chairperson); S. Bell, Ph.D. (joint appointment); R. Cogburn, Ph.D.; R. DeMarr, Ph.D.; D. Dubois, Ph.D.; R. Entringer, Ph.D.; B. Epstein, Ph.D.; R. Hersh, Ph.D.; A. Hillman, Ph.D.; L. Koopmans, Ph.D.; W. Kyner, Ph.D.; M. Mitchell, Ph.D.; C. Moler, Ph.D.; D. Morrison, Ph.D. (joint appointment); P. Pathak, Ph.D.; D. Sanchez, Ph.D.; A. Steger, Ph.D.; A. Stone, Ph.D.; W. Zimmer, Ph.D.; ASSOCIATE PROFESSORS R. Allen, Ph.D.; A. Carasso, Ph.D.; J. Davis, Ph.D.; G. Efroymson, Ph.D.; A. Gibson, Ph.D.; T. Guinn, Ph.D.; L. Hahn, Ph.D.; J. Lewis, Ph.D.; R. Metzler, Ph.D.; C. Onneweer, Ph.D.; S. Pruess, Ph.D.; C. Qualls, Ph.D.; S. Steinberg, Ph.D.; ASSISTANT PROFESSORS J. Ellison, Ph.D.; R. Grassl, Ph.D.; C. Kiefe, Ph.D.; R. Schrader, Ph.D.; M. Shaked, Ph.D.; INSTRUCTORS M. Bevacqua, M.A.; L. Cameron, M.A.; S. Theleman, Ph.D. (part-time); P. Nesbit, M.A.; and any new appointments to be made.

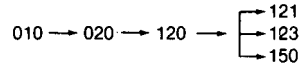
Explanation of footnotes not indicated will be found on p. 118.

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.

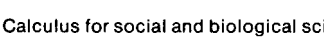
FLOW CHART FOR BEGINNING COURSES

Student's preparation determines starting course in any sequence.

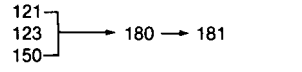
Remedial sequence



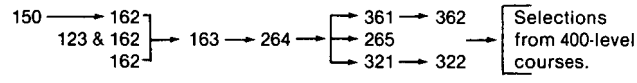
Business sequence



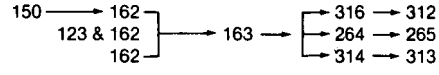
Calculus for social and biological sciences



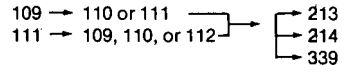
Mathematics major sequence



Engineering sequence



Elementary education sequence



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 exception is Math 101 (A Survey of the Art), which does not require placement testing. 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.

MATHEMATICS FOR ELEMENTARY TEACHERS

Suggested are 111 and 112 or, for students with two or more years of high school mathematics, 213 and 214.

MATHEMATICS FOR SECONDARY TEACHERS

264, 265, and 21 hours in courses 300 and above (selection may be made from II and III below.) Students interested in certification for teaching should refer to p. 54 and must see an adviser in Secondary Education.

MAJOR STUDY

264, 265, and 21 hours in courses numbered above 300, approved by the Mathematics Department. A typical mathematics major is urged to take 321, 322, 361, and 362 as soon as possible; also at least one 400-level course should be taken. Undergraduates who intend to continue on toward a graduate degree in mathematics are advised to take courses in at least one of these languages: French, German, Russian.

Students majoring in mathematics are required to have their courses of study approved by the Department by the beginning of their junior year.

A student who wishes to enroll in any course requiring a prerequisite must earn a minimum grade of C in the prerequisite course.

APPLIED MATHEMATICS

Students interested in applied mathematics are advised to complete the basic sequence (162, 163, 264, 265, 314), complete a large selection of the courses 312, 313, 315, 316, 345, 375, and minor in an applied science (physics, engineering, biology, computer science, economics, etc.). Students interested in doing graduate work in applied mathematics should complete 361, 362, 322, and 321 instead of 314.

STATISTICS

Students interested in statistics are advised to complete the basic sequence (162, 163, 264, 265, 314) and the sequence 345, 346, 347, and 445. Students are encouraged to select from the courses 441, 442, 446, 447, 448, 449 and minor in an applied science (biology, economics, computer science, etc.). Students interested in graduate studies at UNM should complete 361, 362, 322, and 321 instead of 314.

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 as possible for details of the mathematics honors program.

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 engineering and computing science: EECS 203, 206L, 213, 321, 361, and two courses selected from EECS 362 and 322, 421, 436.

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, 265, and 6 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 and Math 180.
4. Students are not allowed credit for both Math 163 and Math 181.
5. Students who have credit for any course numbered 121 and above may not take Math 120 for credit.
6. Students who have credit for any course numbered 162 and above may not take Math 150 for credit.

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.

030. Elementary Algebra. (0)
Ten weeks of remedial high school algebra plus six weeks of college algebra. Offered at Northern New Mexico Branch only.

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 numer-

ical 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 a preparation for Math 121 or 150. Covers algebraic operations: linear equations, inequalities in the plane, graphing, standard equations of lines, roots, radicals, exponents, factoring, applications, fractional expressions and quadratic equations. Prerequisites: high school algebra I or a C in Math 020 and an adequate score on math placement exam or an adequate score on ACTM. Not open to students with credit for courses numbered 121 and above. {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}

122. **Introduction to Finite Mathematics.** (3)
Mathematical models and their interpretations; game and decision theory; linear and dynamic programming; elementary probability and Markov chains. Prerequisite: 121 or 150. {Offered upon demand}

§123. **Trigonometry.** (1)
Definition of the trigonometric functions, radian and degree measure, graphs, basic trigonometric identities and inverse trigonometric functions. Prerequisite: satisfactory score on placement test or 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 Cp Sci 155.) Elementary introduction to computing science. Object of course is an understanding of the relationship between mathematics, computing, and problem solving. {Fall}

§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. Some sections make use of the computing laboratory. 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, some space geometry and partial derivatives, numerical integration, simple differential equations, improper integrals, mean value theorem, L'Hospitals Rule. Some sections make use of the computing laboratory. Prerequisite: C or better in Math 162 or permission of department chairperson. {Summer, Fall, Spring}

§180. **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 an 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. {Fall, Spring}

§181. **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 equations; 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).

191-192. [190] **Freshman Seminars.** (1-1)
Background and supplementary material with emphasis on problem solving for students concurrently enrolled in Math 162, 163. Prerequisite: permission of instructor. {191—Fall, 192—Spring}

264. **Calculus III.** (4)
Vector representation of curves and surfaces, partial derivatives, gradient, tangent lines, 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}

265. **Vector Analysis.** (4)
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}

291-292. **Sophomore Seminars.** (1-3 hrs. each semester)
Background and supplementary material with emphasis on problem solving for interested sophomores. Prerequisite: permission of instructor. {291—Fall, 292—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.

109. **Mathematical Models for Teachers I.** (3)
The elementary school teacher's mathematical needs are taught in a laboratory manner using concrete models familiar to children of almost all cultures; most of the models are easily adapted to use in grade school. This course includes models of kinship relations, matching, numeration schemes, dance, art, and commerce, providing a thorough study of counting numbers, operations, and algorithms. Prerequisite: satisfactory math score on ACT or a satisfactory score on the math placement test. {Fall, Spring}

110. **Mathematical Models for Teachers II.** (3)
Concept and measurement of length, distance, weight, area, and periodic pheonomena (vibrating string, rhythms); common and decimal fractions, percent. Maps, transformational geometry, probability, statistics. Binary operations and the basic properties of associativity, commutativity, and distributivity. Concrete models are used in a laboratory setting. Prerequisite: 109 or 111. {Fall, Spring}

#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 math score on the ACT; or a satisfactory score on math placement test. {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 of real numbers; intuitive geometry and measurement. Prerequisite: 111 or equivalent. {Fall, Spring}

#213. **Elementary Algebra from a Modern Viewpoint.** (3)
Algebraic system; axiomatic approach to the real number system; functions. {Offered upon demand}

#214. **Elementary Geometry from a Modern Viewpoint.** (3)
Ideas of intuitive geometry; concepts of informal geometry with attention to precise terminology. {Offered upon demand}

¶300. **Vector Geometry.** (3)
A vector treatment of lines, planes, curves, and surfaces. {Offered upon demand}

¶303. **Sequences and Series.** (3)
Convergence and error analysis for sequences and series. Prerequisite: 264 or equivalent. {Offered upon demand}

¶304. **Foundation of Secondary Mathematics.** (3)
Inductive and deductive reasoning; mathematical systems and structure. Prerequisite: 264 or equivalent. {Offered upon demand}

¶305. **History of Mathematics.** (3)
A survey of the history of elementary mathematics. Prerequisite: 264 or equivalent. {Offered upon demand}

¶306. **College Geometry.** (3)
Famous theorems of geometry. Fundamentals of Euclidean

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§See "Restrictions."

#Selections from Math 109, 110, 111, and 112 are suggested for fulfilling requirements in elementary education. See El Ed curriculum, p. 47.

¶These courses are available for graduate credit for the degrees of Master of Arts in Secondary Education, Master of Arts in Teaching Mathematics, and Master of Arts in Teaching Science.

geometry. Properties of triangles, quadrangles, and circles. Highlights of non-Euclidean geometry. {Offered upon demand}

¶307. **Intuitive Topology.** (3)
Simple closed curves, orientable and nonorientable surfaces, homeomorphism. {Offered upon demand}

¶308. **Theory and Practice of Problem Solving.** (3)
This course will display mathematical invention and discovery as an experience in which everyone can participate through reasoning by analogy, by induction and through intelligent guessing. Grading is on a CR/NC basis but 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 theory including permutation groups and possibly applications to the theory of equations. Prerequisite: 264 or permission of instructor. {Fall}

¶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. {Offered upon demand}

¶339. **Topics in Mathematics for Elementary Teachers.** (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}

¶398. **Tutoring Freshman Mathematics.** (1-3)
Techniques and experiences in tutoring students in freshman mathematics courses, course limited to undergraduates and graduates with no professional teaching experience; students required to attend a briefing seminar each week and to tutor one or more hours per week. Grading is on a CR/NC basis, but course may be counted toward a major or minor. Prerequisite: one year of calculus and at least 6 hrs. of 300-level mathematics courses. {Offered upon demand}

III. UPPER-LEVEL UNDERGRADUATE COURSES

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. Prerequisite: 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. 265 is recommended. {Spring}

°***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 transformation. Nonmathematics graduate students will be required to complete a term project to receive graduate credit. Prerequisite: 163 or knowledge of FORTRAN. 264 and Engr 102L are recommended. {Summer, Fall, Spring}

317. **Elementary Combinatorics. (3)
Arrangements, combinations, compositions, partitions, induction, recursion, inclusion-exclusion principle, and operating functions. Prerequisite: one year of calculus or permission of instructor. {Offered upon demand}

318. [*418] **Graph Theory.** (3)
Trees, connectivity, coverings, planarity, colorability, digraphs. Prerequisite: permission of instructor. {Offered upon demand}

319-320. **Theory of Numbers. (3, 3)
Divisibility, congruences, primitive roots, quadratic residues, diophantine equations, continued fractions, partitions, number theoretic functions. {319—Spring, 320—Offered upon demand}

°***321. **Linear Algebra.** (4)
Linear transformations, matrices. Canonical forms. Spectral theorems in inner product spaces. Prerequisite: 264 or permission of instructor. {Fall, Spring}

322. **Abstract Algebra. (3)
Groups and rings, homomorphisms, permutation groups, quotient structures, ideal theory. Prerequisite: 264 or permission of instructor. {Summer, Fall}

331-332. **Survey of Geometry. (3, 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)
A brief introduction to probability. Principles of estimation; mean-square error, bias, efficiency, confidence intervals. Principles of hypothesis testing; significance, power. Applications of standard estimation and testing procedures to problems from a variety of fields will be given. Prerequisite: one year of elementary calculus. {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. {Spring}

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 265 is recommended for 362. {361—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}

391-392. **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. {Fall, Spring}

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; corequisite: 265. {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?

¶These courses are available for graduate credit for the degrees of Master of Arts in Secondary Education, Master of Arts in Teaching Mathematics, and Master of Arts in Teaching Science.

° Only one of 314 and 321 may be taken for credit, effective Summer 1974.

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}

***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)**
Galois theory of algebraic field extensions. Transcendental extensions. Prerequisites: 321, 322. {Offered upon demand}

***430. Tensor Analysis. (3)**
Tensors, exterior differential calculus, Stokes' theorem and applications to physics and engineering. Prerequisite: 265 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 probability distributions and some of their applications. Joint distributions, conditional probability and independence. Laws of large numbers, the central limit theorem, and a brief introduction to stochastic processes. Prerequisite: two years of calculus or 345. {Fall}

***442. Applied Stochastic Processes. (3)**
Markov chains and Markov processes. Stationary processes and harmonic analysis. Applications of importance in the physical and biological sciences and engineering. Prerequisite: 441 or equivalent. {Spring}

***445. Linear Models and Their Applications. (3)**
Linear estimation. Gauss-Markov theorem. Generalized least squares estimators. Theory of estimable functions. Tests of linear hypotheses. Confidence ellipsoid. Geometrical interpretations. Computer programs. Computing laboratory and application of theory. Prerequisite: 314, 345, or permission of instructor. {Spring}

***446. Sampling Theory and Practice. (3)**
Methods of sample selection: random and systematic samples, stratified and multistage sampling. Allocation principles and use of supplementary information. Sampling and nonsampling error. Design and execution of survey data. Computer utilization and a sampling project. Prerequisite: 345 or permission of instructor. {Offered upon demand}

***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. {Offered upon demand}

***448. Nonparametric Methods. (3)**
Statistical problems and their nonparametric solutions. Rank order tests, sign tests, chi-square tests, and Kolmogorov-Smirnov tests. Tolerance intervals and nonparametric estimation. Relative efficiency of nonparametric inference. Prerequisite: 345 or permission of instructor. {Offered upon demand}

***449. Topics in Probability and Statistics. (3)†**

***455. Mathematical Logic. (3)**
(Also offered as Cp Sci 455.) 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 background in mathematics with a good intuitive feeling for what constitutes mathematical proofs. Prerequisite: permission of instructor. {Fall}

***456. Nonstandard and Higher Order Logic. (3)**
(Also offered as Cp Sci 456.) Intuitionistic logic and modal theory, modal logics, minimal logics, classical theory of types, the Godel incompleteness theorem, Henkin's theory of types. Prerequisite: 455. {Spring}

***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: 314 or permission of instructor. {Offered upon demand}

***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}

***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}

***473-474. Integral Equations and Boundary Value Problems. (3, 3)**
Theory of integral equations, eigenfunction expansions, boundary-value problems, conversion into integral equations, variational methods, approximation methods. Prerequisite: knowledge of calculus and linear algebra. {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. {Fall}

***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, applications 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 321, 322, and 361-362, or evidence of equivalent preparation, is required for admission to any of the following courses.

***500. Foundations of Set Theory. (3)**
(Also offered as Cp Sci 500.)

***518. Selected Topics in Combinatorics and Graph Theory. (3)**
{Offered upon demand}

***519. Selected Topics in Number Theory. (3)†**

***521-522. Modern Algebra. (3, 3)**

***527-528. Theory of Rings. (3, 3)**

***529. Selected Topics in Algebra. (3)†**

***531-532. Topology. (3, 3)**

***533-534. Algebraic Topology. (3, 3)**

***536. Differential Geometry. (3)**

***539. Selected Topics of Geometry and Topology. (3)†**

***541-542. Probability Theory. (3, 3)**
{541—Fall, 542—Spring}

***543-544. Statistical Inference. (3, 3)**
Prerequisites: 441, 464. {543—Spring, 544—Fall}

***545-546. Stochastic Processes. (3, 3)**
Prerequisites: 541-542. {Offered upon demand}

***547. Statistical Design of Experiments. (3)**
Prerequisite: 543 or 455 or permission of instructor. {Offered upon demand}

***548. Techniques of Statistical Consulting. (3)**
Prerequisite: 6 hrs. 400-level statistics or permission of instructor.

***549. Selected Topics in Probability and Statistics. (3)†**

***551-552. Problems. (1-3 hrs. each semester)†**

***557. Computational Mathematics. (3)†**
(Also offered as Cp Sci 557.) {Offered upon demand}

***558. Mechanical Theorem Proving. (3)**
(Also offered as Cp Sci 558.) Prerequisite: mathematical logic. {Spring}

***561-562. Functions of a Complex Variable. (3, 3)**
{561—Fall, 562—Spring}

***563-564. Functions of a Real Variable, Measure, Integration. (3, 3)**
{563—Fall, 564—Spring}

***565. Harmonic Analysis. (3)**
Prerequisites: 562, 564, 581, or consent of instructor. {Offered upon demand}

***569. Selected Topics in Analysis. (3)†**

***571-572. Ordinary Differential Equations. (3, 3)**
Prerequisite: 462. {Offered upon demand}

***573-574. Partial Differential Equations. (3, 3)**
Prerequisites: 473-474. {Offered upon demand}

***575. Calculus of Variations. (3)**
Prerequisites: 473-474. {Offered upon demand}

***576. Approximation Theory. (3)**
Corequisite: 563; recommended: 581. {Offered upon demand}

***577-578. Integral Equations. (3, 3)**
Corequisites: 563, 581. {Offered upon demand}

***579. Selected Topics in Applied Mathematics. (3)†**

***581-582. Functional Analysis. (3, 3)**
Prerequisites: 563-564; recommended: 473-475. {Offered upon demand}

***583. Linear Topological Spaces. (3)**
Prerequisite: 481. {Offered upon demand}

***584. Banach Algebras. (3)**
Prerequisites: 431, 481; recommended: 531. {Offered upon demand}

***589. Selected Topics in Functional Analysis. (3)†**

***619. Seminar in Number Theory. (1-3)†**

***629. Seminar in Algebra. (1-3)†**

***631-632. Algebraic Geometry. (3, 3)**
{Offered upon demand}

***639. Seminar in Geometry and Topology. (1-3)†**

***643. Advanced Statistical Inference I. (3)**
Prerequisites: 544, 564; corequisite: 541. {Fall}

***644. Advanced Statistical Inference II. (3)**
Prerequisite: 643. {Spring}

***649. Seminar in Probability and Statistics. (1-3)†**

***650. Reading and Research. (1-6)†**

***669. Seminar in Analysis. (1-3)†**

***672. Advanced Numerical Analysis—Eigenvalues. (3)**
Prerequisites: 475-476 and a sound knowledge of the fundamentals of linear algebra. {Offered upon demand}

***673. Advanced Numerical Analysis—Ordinary Differential Equations. (3)**
Prerequisites: 475-476 and 462 or equivalent, with permission of instructor. {Offered upon demand}

***674. 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, with the consent of instructor.

***675-676. Differential Operators. (3, 3)**
Prerequisite: 481, 473-474 or 573-574; recommended: 581-582. {Offered upon demand}

***677. Pattern Recognition. (3)**
(Also offered as Cp Sci 677.) {Offered upon demand}

***679. Seminar in Applied Mathematics. (1-3)†**

***689. Seminar in Functional Analysis. (1-3)†**

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

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Jones, M.D.; R. G. Lane, Ph.D.; R. K. Lenhart, M.D.; J. B. McDonald, M.D.; S. B. Paster, M.D.; A. Smith, M.D.; G. Stovring, M.D.; ADJUNCT ASSISTANT PROFESSORS H. W. O'Brien, Jr., Ph.D.; C. Rymer, M.D.; INSTRUCTORS C. R. Appledorn, B.S.; J. E. Seubert, B.S.R.T.; ADJUNCT INSTRUCTOR J. D. Doss, M.S.; LECTURER III G. H. Trovato, R.T.; VOLUNTEER FACULTY D. F. Cadora, M.D.; P. M. Fox, M.D.; R. M. Henderson, M.D.; O. Legant, M.D.; M. Lesser, M.D.; A. E. Noyes, M.D.; J. J. Senyszyn, M.D.; D. L. Simmons, M.D.; C. M. Thompson, M.D.; G. W. West, M.D.; D. A. Wolfel, M.D.

SURGERY

PROFESSORS R. C. Doberneck, M.D.; W. S. Edwards, M.D. (Chairperson); J. M. Shuck, M.D.; D. Smith, M.D.; A. E. Walker, M.D.; ASSOCIATE PROFESSORS T. Borden, M.D.; R. Gooding, M.D.; F. Herzon, M.D.; L. E. Lamb, Ph.D.; S. B. Leslie, M.D.; W. A. Sterling, M.D.; ASSISTANT PROFESSORS B. Akl, M.D.; P. J. Clark, M.D.; S. Cobb, M.D.; F. Fiber, M.D.; A. Kosloske, M.D.; J. Larkin, M.D.; R. O'Cleireachain, M.D.; M. Orgel, M.D.; R. Reidy, M.D.; A. Reynolds, M.D.; W. E. Swisher, Ph.D.; P. Turner, M.D.; T. Wachtel, M.D.; LECTURERS M. D. Smith, M.A.; A. W. Talley, M.D.; VOLUNTEER FACULTY W. E. Badger, M.D.; J. D. Bartlett, M.D.; J. W. Bettman, Jr., M.D.; J. H. Birch, M.D.; M. W. Bornw, M.D.; H. J. Burress, M.D.; J. Cannon, M.D.; R. L. Conn, M.D.; P. G. Cornish III, M.D.; E. D. David, M.D.; J. A. Dillahunt, M.D.; N. Dugan, M.D.; W. O. Edward, M.D.; V. T. Floyd, M.D.; H. S. Friedman, M.D.; E. J. Gerety, M.D.; B. M. Glover, M.D.; K. F. Goldblum, M.D.; W. C. Gorman, M.D.; J. Gunasargarem, M.D.; B. Hagaman, M.D.; F. T. Herhahn, M.D.; F. Hesse, M.D.; R. H. Intress, M.D.; P. T. Jacob, M.D.; M. Janson, M.D.; E. L. Johnson, M.D.; D. E. Kilgore, Jr., M.D.; R. M. Klebanoff, M.D.; I. C. Knight, M.D.; W. W. Kridelbaugh, M.D.; W. J. Langlois, M.D.; L. Londer, M.D.; P. U. Martinez, M.D.; J. D. McCarthy, M.D.; W. J. McIver, M.D.; L. J. Miller, M.D.; K. Moedl, M.D.; F. Mora, M.D.; J. O'Reilly, M.D.; L. Parsons, Jr., M.D.; O. A. Peloso, M.D.; A. G. Powers, M.D.; J. B. Roberts, M.D.; C. C. Robinson, M.D.; H. C. Rogers, M.D.; M. Rose, M.D.; R. Rosen, M.D.; A. Rosenberg, M.D.; G. Rubin, M.D.; J. Sands, M.D.; A. G. Simms II, M.D.; R. Sonntag, M.D.; L. J. Spingola, M.D.; A. C. Tenney, M.D.; P. Vitale, M.D.; G. Wasylenki, M.D.; B. Weber, M.D.; L. H. Wilkinson, M.D.; J. N. Wilson, M.D.

See Graduate School Bulletin for description of courses numbered 500 and above.

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}

504-505. Clinical Science Makeup Course. (5, 5)
Prerequisite: one year of medical school study. {Summer only}

***520. Clinical Science Makeup Course. (10)**
Prerequisite: one year of medical school study. {Summer}

530-531. Clinical Science II. (5, 5)
Prerequisites: 504-505.

540. Medicine Clerkship. (12)

541. Obstetrics-Gynecology Clerkship. (6)

542. Pediatric Clerkship. (6)

543. Psychiatry Clerkship. (6)

544. General Surgery. (6)

550. Surgical Subspecialties. (6)

570. Neurology-Neurosurgery Clerkship. (6)

571. Clinical Science IV. (12)

572. Selectives. (12)

573. Electives. (1 cr. hr. for each week of full-time medically related activity)

560. Neurobiology Clerkship. (4)
Total of 12 hrs. required to meet degree requirements.

561. Direct Patient Care. (4)
Total of 12 hrs. required to meet degree requirements.

562. Electives. (4)
Total of 12 hrs. required to meet degree requirements.

563. Preceptorship. (4)
Total of 12 hrs. required to meet degree requirements.

MEDICAL BIOLOGY

500-501. Medical Biology I. (13, 13)

502L-503L. Medical Biology I Laboratory. (6, 6)

526-527. Medical Biology II. (11, 11)
Prerequisite: Med Biol I (500-501 and 502L-503L). Course spans both semesters; also offered in Medical Science Program as 594-595 and 596L-597L.

528L-529L. Medical Biology II Laboratory. (6, 6)
Prerequisites: same as for 526 and 527.

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 Sciences and is designed to provide the experienced lay investigators working in 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 acquaint 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 medicolegal. 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)** Moffat
Cell physiology for nonbiological scientific personnel, with emphasis on immunological response of the body to disease. 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}

405. Research in Physiology. (1-6) Physiology Staff
{Offered upon demand}

***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. {Fall}

***433. Basic Virology. (1)** Cords, Radloff
Structure, composition, classification, and replication of viruses. Prerequisite: student in Department of Microbiology. {Fall}

***434. Clinical Laboratory Microbiology. (2)** Ulrich
Prerequisite: permission of instructor. May be repeated under

different areas of concentration. {Summer, Fall, Spring}

*436. **Medical Virology.** (3) Cords, 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: Biol 454L. {Spring 1978 and alternate years}

*437L. **Medical Virology Laboratory.** (2) Cords, McLaren
Laboratory experience in animal cell culture techniques, animal inoculation, and serological reactions for the isolation and identification of viruses of medical importance. Prerequisite: Med Sci 436 and permission of instructor. {Spring 1978 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 1978 and alternate years}

*481. **Biological Chemistry.** (3) Biochemistry Staff
(Also offered as Chem 481.) Basic biochemical concepts. Designed for first-year graduate students with major emphasis on catabolic pathways and basic energy concepts. Prerequisites: Chem 302 and 311 or 315. {Fall}

*482. **Biological Chemistry.** (3) Biochemistry Staff
(Also offered as Chem 482.) Continuation of 481 with major emphasis on anabolic metabolism and control mechanisms. Prerequisite: 481. {Spring}

*510. **Human Microscopic Anatomy.** (3) Moffat
Prerequisites: 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: Med Sci 510, 6 hrs. biology or equivalent, or permission of instructor. **Offered at Los Alamos Laboratory only.**

*520. [*420] **Biochemistry of the Nervous System.** (3) Wild
(Also offered as Biol 420.) Prerequisite: one semester biochemistry.

*570. **Surgical Pathology Seminar—Elementary.** (1) Pathology Staff
Prerequisites: 594 and permission of instructor.

*571. **Diagnostic Cytology Seminar.** (1) Jordan
Prerequisite: 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
Prerequisite: 594 and permission of instructor.

*573-574. **Clinical Pathology Seminar.** (2, 2) Howard
Prerequisite: 594 and permission of instructor.

*575. **Pathology.** (8) Anderson
Offered only during summer session at the Given Institute, Aspen, Colorado. Prerequisite: see prospectus.

*581. **Advanced Topics in Biological Chemistry.** (1-3)‡ Biochemistry Staff
(Also offered as Chem 581.) Prerequisite: 482. {Offered upon demand}

*583. **Clinical Chemistry.** (1-2) Standefer
Prerequisite: organic chemistry and biochemistry.

*584L. **Clinical Chemistry Laboratory.** (8) Standefer
Prerequisite: permission of instructor.

*588-589. **Advanced Biometry for Research.** (3) Pathak
Prerequisite: Math 162-163 or 180-181 or permission of instructor.

*590-591. **Medical Biology I. (1-8 hrs. each semester)**
Prerequisite: permission of the Dean of the School of Medicine.

*592L-593L. **Medical Biology I Laboratory. (1-6 hrs. each semester)**
Prerequisite: same as 590-591.

*594-595. **Medical Biology II. (1-12 hrs. each semester)**
Prerequisites: 590-591, 592L-593L, and permission of the Dean of the School of Medicine.

*596L-597L. **Medical Biology II Laboratory. (1-6 hrs. each semester)**
Prerequisite: same as for 594-595.

*599. **Master's Thesis. (1-6 hrs. per semester)**

*601-602. **Advanced Physiology. (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 equivalents.

*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 equivalents.

*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)

*619. **Comparative Vertebrate Physiology.** (3) Wood
(Also offered as Biol 515.) Prerequisites: 590-591, Biol 429L, 430L, or equivalent. {Offered in alternate years}

*620. **Advanced Biochemistry.** (4)‡ Biochemistry Staff

*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 324 or 481-482 or Med Sci 590-591.

*623. **Biochemistry of Steroids.** (3) Scallen
(Also offered as Chem 623.) Prerequisites: Chem 301-302, Chem 324 or 481 or Med Sci 590-591.

*631L. **Introduction to Research Techniques in Microbiology.** (2-5)‡ Radloff
Prerequisite: approval of Microbiology Department Chairperson. Limited to students in the Department of Microbiology. {Fall}

*632. **Advanced Topics in Microbiology.** (1-3) Microbiology Staff
Prerequisite: biochemistry, general microbiology or equivalent. {Offered upon demand}

*633L. **Advanced Microbial Physiology and Metabolism.** (4) Scaletti
{Offered upon demand}

*634. **Biochemical Genetics.** (2-4)‡ Baker
Prerequisite: Med Sci 590 or biochemistry, genetics and microbiology. {Spring 1977 and alternate years}

*635. **Immunobiology.** (3) Tokuda
Prerequisite: biochemistry, general microbiology, and permission of instructor. {Fall}

*636. **Advanced Virology.** (3) Cords, Radloff
Prerequisite: biochemistry, immunology, virology, or equivalent. {Offered Spring 1977 and alternate years}

*637. **Immunogenetics.** (3) Goldberg
Prerequisite: Med Sci 635. {Offered Spring 1977 and alternate years}

*638. **Microbiology Seminar.** (1)

*639. **Phagocytic Cells.** (2) Van Epps
Prerequisite: Med Sci 635 and permission of instructor. {Offered Spring 1978 and alternate years}

*650. **Translocations in Biological Systems.** (3) Galey
Prerequisites: 590-591 or Biol 429L, 430L or permission of instructor; pre- or corequisites: Chem 311-312. {Offered in alternate years}

*651. **Integrative Functions of the Endocrine System.** (3) Ratner
Prerequisite: 590-591 or equivalent or permission of instructor. {Offered in alternate years}

*652. **Advanced Cardiovascular Physiology.** (3) Priola, Weiss
Prerequisites: 500-501, 502L-503L, or equivalent. {Offered in alternate years}

*653. **Renal Water and Electrolyte Metabolism.** (4) Solomon
Prerequisites: 590-591, or Biol 429L, 430L or permission of instructor. {Offered in alternate years}

*654. **Hormonal Control of Sex and Reproduction.** (3) Ratner
Prerequisite: same as 653. {Offered in alternate years}

*656. **Advanced Neurophysiology.** (3) Partridge
Prerequisite: same as 653. {Offered in alternate years}

*657. **Special Topics in Physiology.** (3) Physiology Staff
Prerequisite: permission of instructor.

*658. **Physiological Techniques.** (4) Physiology Staff
Prerequisite: permission of instructors.

*659. **Seminar in Physiology.** (1)

*660. **Advanced Respiratory Physiology.** (3) Wood
Prerequisites: 500-501, 502L-503L or equivalent. {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 and 591 or equivalent or special permission of instructor. {Spring}

***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}

***680. Surgical Pathology Seminar—Advanced. (1)** Black
Prerequisite: 570 and permission of instructor.

***681. Oncology Seminar. (1)** Black
Prerequisite: 570 and permission of instructor.

***682. Pathology Research Seminar. (1)** Troup
Prerequisite: permission of instructor.

***683. Immunology Seminar. (1)** Anderson
Prerequisite: permission of instructor.

***690. Research in Clinical Medical Sciences.** [Research in Medical Sciences] **(2-6 hrs. per semester, to a maximum of 12)** Obenshain
Prerequisite: permission of Dean of Undergraduate Medical Education.

***691. Scientific Writing for Graduate Students. (1)** Ladman

***695. Research in Basic Medical Sciences.** [Research] **(2-6 hrs. per semester, to a maximum of 12)** Staff

***699. Dissertation. (1-9 hrs. per semester)**

COMMUNITY SERVICES

General prerequisite: enrollment in UNM School of Medicine Community Service Worker Program or permission of instructor.

100. [010] **Introduction to Community 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 community services worker within care-giving institutions.

102. Principles of Interviewing. (2)
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.

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.

106. Community Development and Social Organization. (3)
Understanding factors which cause communities of various sizes and types to exist through participation and/or initiation of a self-help group, learn methods of effecting change in the area of drug abuse, employment, alcoholism, etc.

108. Dimensions of Growth and Development. (3)
This course examines the sequential growth and development of the human from conception through adolescence. Emphasis will be placed on observations of infants, children, pre-adolescents in a variety of settings such as nurseries, kindergartens, public schools, special education centers, recreation areas as well as homes.

109. New Techniques of Assessment and 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.

110. 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.

111. 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.

120. Dynamics of Community Health. (3)
Focuses upon the dimensions of the health-illness continuum. Topics presented are a basic knowledge and understanding of (a) health, (b) epidemiology, (c) chronic and communicable diseases, (d) nutrition, (e) home safety and sanitation, (f) techniques for health education of family and community groups.

149. Workshop in Human Service Problems. (1-3)‡‡
In-depth individual and/or small-group exploration of problem or special interest areas (e.g., family therapy, aging). May be research or demonstration project.

150-151. [052, 150] **Clinical Experience in Community Services. (3-5 hrs. per course)**
Student is assigned to a community service agency for 160 to 320 hours per semester. Will be supervised by agency personnel. Weekly seminar with Community Services staff required.

250-251. [151-152] **Advanced Clinical Experience in Community Services. (3-5 hrs. per course)**
Continuation of 150, 151 with increased student responsibility for client care/service. Weekly seminar. Prerequisite: CSW 150-151.

MEDICAL LABORATORY SCIENCES

§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 a 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.

§100. Medical Laboratory Science (Introduction). (1)
Introduction to scope and ethics of profession. Basic techniques, instrumentation, laboratory safety, and terminology. 1 lecture. Prerequisite: application filed with Laboratory Sciences.

§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}

§103. [§101P] **Practical Training in Clinical Urinalysis I. (1)**
Supervised performance of urinalysis procedures in an affiliated hospital laboratory for Med Lab Tech program; 12 hours per week for 4 weeks. Prerequisite: 101. {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}

§104. [§102P] **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}

§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)

‡‡May be repeated for credit to a maximum of 9 hours.
§Credit limited to students enrolled in Medical Laboratory Science Program.

§252. **Practical Training in Clinical Hematology and Hemostasis I.** (3) Supervised performance of blood cell 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 Clinial 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)

§401. **Clinical Chemistry II.** (5) 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; 40 hrs. per week for 6 weeks. Prerequisite: acceptance into the 12-month approved program in Med Tech. (July-December)

§402. **Clinical Hematology and Hemostasis II.** (4) A thorough study of the blood and blood-forming tissues, including normal and abnormal morphology and a study of the coagulation mechanism; 40 hrs. per week for 5 weeks. Prerequisite: acceptance into the 12-month approved program in Med Tech. (July-December)

§403. **Clinical Microbiology II.** (5) The microbiological aspects of infectious disease is studied with emphasis on techniques, methods, and differential media used to isolate and identify pathogenic bacteria, fungi, viruses, and parasites; 40 hrs. per week for 9 weeks. Prerequisite: acceptance into the 12-month approved program in Med Tech. (July-December)

§404. **Clinical Immunohematology II.** (2) The theory and principles of blood banking, including the techniques of cell typing, antibody identification, and component therapy; 40 hrs. per week for 2 weeks. Prerequisite: acceptance into the 12-month approved program in Med Tech. (July-December)

§405. **Clinical Urinalysis II.** (1) A study of the kidney and the physical, chemical, and microscopic examination of urine; 40 hrs. per week for 2 weeks. Prerequisite: acceptance into the approved 12-month program in Med Tech. (July-December)

§406. **Clinical Immunology and Serology II.** (1) A study of the fundamental principles of immunology and serological methods used in testing for immunological reactions; 40 hrs. per week for 1 week. Prerequisite: acceptance into the 12-month approved program in Med Tech. (July-December)

§451. **Practical Training in Clinical Chemistry II.** (4) 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 7 weeks. Prerequisite: 401. (January-June)

§452. **Practical Training in Hematology and Hemostasis II.** (3) 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 5 weeks. Prerequisite: 402. (January-June)

§453. **Practical Training in Microbiology II and Serology II.** (4) Supervised instruction in the performance of microbiological and serological procedures in an affiliated hospital for students enrolled in the Med Tech program; 40 hrs. per week for 7 weeks. Prerequisites: 403, 406. (January-June)

§454. **Practical Training in Immunohematology II.** (2) 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. (January-June)

§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. (January-June)

PHYSICAL THERAPY

301L. Therapeutic Exercise I. (3) Owens
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) Owens
Use of apparatus and assistive devices. Evaluation and program planning for specific orthopaedic problems. Prerequisite: 301L. 2 lectures, 3 hrs. lab. {Spring}

305L. Therapeutic Procedures I. (2) Hennigh
Physiological effects, indications, contraindications, and rationale for therapeutic uses of heat, cold, and water; standing table, traction, and massage; monitoring of vital signs, sterile technique. Prerequisite: 321L. 1 lecture, 3 hrs. lab. {Fall}

306L. Therapeutic Procedures II. (2) Hennigh
Physiological effects, indications, contraindications, rationale for therapeutic use of low- and high-frequency electrical currents, ultrasound, ultraviolet irradiation. Prerequisites: 305L, 341. 1 lecture, 3 hrs. lab. {Spring}

310. Professional Development I. (2) Barnett
Professional ethics, quality of care assessment, communication and the professional organization. Prerequisite: 371L. {Spring}

321L. Human Anatomy for Physical Therapists. [Human Anatomy/Neuroanatomy] (6) O'Brien
Gross anatomy of the musculoskeletal, nervous, circulatory, respiratory, digestive, and reproductive systems. Prerequisite: admission to program. 5 lectures, 15 hrs. lab. {Summer only}

322. Neuroanatomy for Physical Therapists. (2) 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}

341. Survey of Medical Sciences for Physical Therapists I. (2) Staff
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}

351L. Evaluative Procedures I. (3) Barnett
Evaluation of joint range of motion, strength, and body alignment. Interpretation and utilization of results. Prerequisite: admission to program. 1 lecture, 6 hrs. lab. {Fall}

362L. Human Physiology for Physical Therapists. (4) Solomon, Staff
Physiology of the human body with emphasis on cardiovascular, respiratory, and neuromuscular systems. Prerequisite: 321L. 3 lectures, 3 hrs. lab. {Spring}

370. Kinesiology and Functional Anatomy. (2) O'Brien
Biomechanics, functional characteristics of muscle; analysis of therapeutic exercises; normal gait. Prerequisite: 321L. {Fall}

371L. Clinical Education I and Seminar. (2) Clinical Associates, Barnett
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. {Fall}

372L. Clinical Education II. (1) Clinical Associates, Barnett
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. {Spring}

401L. Therapeutic Exercise III. (5) Barnett
Neurophysiological approaches to treatment of neuromuscular dysfunction; facilitation and inhibition techniques. Prerequisites: 302L, 362L. 2 lectures, 9 hrs. lab. {Fall}

402L. Therapeutic Exercise IV. (3) Staff
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}

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) Owens
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}

432. Professional Development II. (2) Owens
Research design and methods; survey and critique of profes-

§Credit limited to students enrolled in Medical Laboratory Science Program.

sional literature. Prerequisites: 362L, 401L, 451L. {Spring}

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, 362L. 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; autoimmune disorders and collagen disease in adults and children. Prerequisites: 341, 441. {Spring}

451L. Evaluative Procedures II. (2) Staff
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, Barnett
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. {Fall}

472L. Clinical Education IV. (3) Clinical Associates, Barnett
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. {Spring}

475L. Clinical Education V. (6) Clinical Associates, Barnett
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. {Summer}

480. Administration and Supervision. (2) Barnett
Planning and administration of physical therapy services; supervisory and consultation techniques. Prerequisites: 310, 471L. {Spring}

PHYSICIAN'S ASSISTANT TRAINING PROGRAM

Offered at Gallup Branch only.

015. Reading and Study Skills. (0)
Techniques of improving learning efficiency are taught. Scheduling study time, organizing materials, critical listening, increasing vocabulary, and improving reading speed and comprehension are emphasized. Common medical roots, prefixes, and suffixes are introduced. Pretesting determines student participation in the course. Not a required course.

101. Basic Concepts in Health and Illness. (2)
The organization of the human body at the cellular, tissue, and organ levels is discussed. Homeostasis, the basic principles of nutrition, body defense mechanisms, mechanisms of infections, and etiologic categoreis of disease are discussed.

103. Pediatric Growth and Development, Nutrition. (2)
Students will be taught at UNM campus the basic information concerning nutritional needs of infants and children. Lectures on normal growth and development of preschool children will be followed by demonstration of the Denver Developmental Screen Test.

105. Surface Anatomy and Organ Systems. (2)
Terminology used in clinical medicine to locate lesions with respect to major surface anatomical landmarks are taught.

107. Origin and Significance of Symptoms and Signs. (2)
Students are introduced to the most common and serious symptoms and signs encountered in ambulatory medicine. This course is combined with and inseparable from 119.

109. Epidemiology and Preventive Medicine. (2)
The discipline is defined and its application to diagnostic reasoning and the control of infectious diseases is illustrated. Host, infectious agents, and environmental relationships in infectious disease are discussed.

111. Pharmacotherapeutics. (1)
Sources, preparation, naming, and regulations governing drugs are reviewed. Basic concepts of drug administration, absorption, distribution, metabolism, and excretion are presented. Discussion of clinical applications is limited to drugs regularly encountered in ambulatory medicine.

113. The Problem-Oriented Medical Record. (0)
Students are acquainted with the problem-oriented record system by contrasting it with the source-oriented medical records system. The formulation and utilization of a complete and accurate patient problem list is emphasized.

117. CHM (P.A.) Role Development. (1)
Students meet weekly with members of the Mental Health Team to discuss group, family, and personal problems related to the process of learning new skills, assuming greater responsibilities in health care, adjusting to the demanding time commitments of clinical medicine, and learning to relate effectively to other medical and paramedical personnel. Literature assignments are included giving historical perspective on health care systems.

119. Adult and Pediatric Physical Examination. (3)
Students are taught to perform a complete general physical examination according to a routine established by the training staff. This routine is adhered to both in content and in sequence throughout the first year of training. The basic examining techniques of observation, palpation, percussion, and auscultation are stressed.

121. Interview Techniques, Adult and Pediatric Medical History Taking. (2)
The basic principles of interviewing are practiced extensively. Students are taught to proceed from general to specific questions and to analyze each symptom in terms of seven dimensions: bodily location, quality, quantity, timing, setting, modifying factors, and associated symptoms.

123. Basic Laboratory and Radiologic Skills. (2)
Subjects presented include the collection, storage, transportation, and disposal of specimens; laboratory safety; care and use of the microscope; and an introduction to the performance and interpretation of laboratory tests commonly used in ambulatory medicine.

125. Medical Procedures. (1)
This course familiarizes the student with many of the diagnostic and therapeutic procedures performed by physicans' assistants. Indications for and complications of each procedure are learned. Students are acquainted with the fundamentals of sterile technique appropriate for both major and minor surgery.

201. Adult and Pediatric Clinical Pathology. (10)
Clinical aspects of common and emergency illnesses are presented. Management decisions relating to the identification of emergency conditions which require immediate treatment and physician referral are emphasized.

211. Dentistry. (1)

213. Internal Medicine. (2)

215. Mental Health. (2)

217. Obstetrics and Gynecology. (2)

219. General Surgery, Ophthalmology. (2)

221. Orthopedics. (2)

223. Otolaryngology. (1)

225. Pediatrics. (2)

227. Emergency Medical Care. (2)

229. Community Clinic. (2)

301. Emergency Problems. (1)

303. Preventive Services. (1)

305. Clinical Problems in Pediatrics. (4)

307. Clinical Problems in Adult Medicine. (9)
Students are assigned singularly or in pairs to hospitals in the vicinity which provide primary medical care to a defined community. Students are evaluated monthly by means of a written examination.

309. Clinical Medicine Preceptorship (Adult and Pediatric). (10)
Students are provided with supervised experience in the recognition and management of a variety of clinical problems encountered in a community hospital and clinic system. The Skills Proficiency List is signed by the supervisory physician when he or she is convinced the the student has mastered a particular skill.

311. General Principles of Management of Community Health Medics. (2)
Basic concepts and structure of sound management is presented in order to prepare the students for understanding and supervising employees in service units and field clinics. Some community development concepts are also discussed.

313. Seminars: Special Topics in Clinical Medicine (Adult and Pediatric). (3)
Students return to Gallup Indian Medical Center once each

month for special instruction in subjects which, while relevant and useful for their practice, cannot be taught in the field units.

RADIOLOGIC AND NUCLEAR MEDICINE TECHNOLOGIES

RADIOLOGIC TECHNOLOGY

010. Research Problems. [Journal Club] **(0)** Seubert, Trovato
Survey of literature related to research in the field of radiologic technology and radiology. {Fall, Spring}

020. Radiographic Film Evaluation. [Film Critique] **(0)** Seubert, Trovato
A practical study in the recognition of differences between diagnostic and poor quality radiographs and the reasoning governing such differences. {Fall, Spring}

101. Radiologic Physics. [Basic Radiologic Physics] **(4)**
An introduction to the basic principles of electrical and radiation physics and the operation of x-ray and auxiliary equipment, including demonstrations. {Spring}

103. Professional Orientation and Ethics. (1) Seubert, Trovato
An introduction to the field of radiologic technology, relation to the complete medical structure, the nature and value of ethics and professional conduct within the medical profession. {Summer}

105. Medical Terminology. (1) Seubert
A study of medical terminology as applied to the specialty of radiology. {Summer}

107. Principles of Radiographic Exposure. [Origin and Significance of Symptoms and Signs] **(3)** Seubert
Principles and theory of formulating x-ray techniques, exposure factors, and the generation and properties of x-radiation. {Summer}

108. Clinical Radiologic Technology I. [Radiologic Technology Laboratory I] **(4)** Technical Staff
Instruction and practice in the principles of radiographic exposure, formulae, and technique. {Fall}

121. Methods of Patient Care. [Radiological Nursing Procedures] **(1)** Petty
Study of basic concepts and techniques in nursing specific to application in a department of radiology. Prerequisite: 103. {Spring}

151. Human Structure and Function. [Human Anatomy and Physiology] **(3)** Seubert
Principles of anatomy and physiology as applied to the structure and functions of the human body. Prerequisite: 105. {Fall}

161. Radiographic Procedures I. [Radiographic Positioning] **(3)** Cyphert
Study in the art of radiographic positioning of the structures and organs of the human body utilized in obtaining diagnostic radiographs. Prerequisites: 107, 108. {Fall}

163. Radiographic Procedures II. [Intermediate Radiographic Positioning] **(3)** Cyphert
Radiographic positioning of the structures of the human body. The need for multiple views for maintenance of detail, correct proportion of body parts and their proper projection to avoid magnification, distortion, and superimposition. Prerequisites: 107, 108. {Spring}

164. Clinical Radiology Technology II. [Intermediate Radiographic Positioning Laboratory] **(4)** Technical Staff
Radiographic positioning of the structures of the human body. The need for multiple views for maintenance of detail, correct proportion of body parts, and their proper projection to avoid magnification, distortion, and superimposition. Corequisite: 163. {Spring}

205. Radiation Protection. (1) Appledorn
A study in natural and background radiation, radiation hazards, radiation protection survey procedures, and shielding factors, with problems. {Summer}

207. Clinical Radiologic Technology III. [Radiologic Technology Laboratory II] **(8)** Technical Staff
Actual clinical radiographic positioning in radiographic suites under the supervision of certified radiologic technologists. Prerequisites: 107, 108. {Summer}

221. Radiographic Processing Technique. [Preventive Maintenance and Radiographic Instrumentation] **(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. Prerequisites: 107, 108. {Fall}

260. [162L] **Clinical Radiologic Technology IV.** [Radiographic Positioning Laboratory I] **(6)** Technical Staff
Continuation of RS 207. Prerequisite: 161. {Fall}

261. Clinical Radiologic Technology V. [Radiographic Positioning Laboratory II] **(6)** Technical Staff
Continuation of RS 260. Prerequisites: 161, 260. {Spring}

274. [211, 271] **Imaging I.** [Introduction to Nuclear Medicine, Radiation Therapy] **(2)** Appledorn
History, instrumentation, and procedural techniques of the specialties of nuclear medicine and radiation therapy technologies. Prerequisites: 101, 151, 205. {Fall}

275. [201] **Imaging II.** [Intermediate Radiological Physics] **(2)** Hallberg
Conventional and electronic image intensification systems; video recorders, tubes, cine, cameras, and film changers. Introduction to other imaging modalities such as computerized axial tomography, ultra sound, and xeroradiography. Prerequisite: 101. {Spring}

281. Radiographic Procedures III. [Special Radiographic Procedures] **(3)** Seubert
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. Dental radiography, intraoral anatomy, positioning techniques applicable to intraoral examinations. Prerequisites: 161, 260. {Fall}

300. Basic Radiation Biology. (1) Yuhas
Survey of the acute, intermediate, and late effects of ionizing radiation on biological levels of organization ranging from the molecule through the organism. Prerequisite: 101. {Spring}

NUCLEAR MEDICINE TECHNOLOGY

291. Survey of Medical and Surgical Diseases. (3) Staff
Nature and cause of diseases and the changes that occur with disease and injury. Prerequisites: 105, 121. {Spring}

301. Advanced Radiological Physics. (2) Hallberg
Diagnostic and therapeutic radiation physics; nuclear physics, principles of radiologic and nuclear instrumentation. Prerequisite: 201. {Fall}

309L. Basic Nuclear Laboratory Procedures. (2) Mason
Principles of counting, counting statistics, venesection, and preparation of patient samples. {Summer}

311L. Intermediate Nuclear Laboratory Procedures. (2) Knight
Principles of thyroid uptake measurements **in vitro** thyroid studies, Schilling tests, and blood volume studies. Prerequisite: 309L. {Spring}

313. Clinical Nuclear Medicine I. (2) Staff
Principles of performance and rationale for routine clinical nuclear medical procedures involving organ imaging, dynamic function studies, blood flow studies, and ventilatory function. Corequisite: 291 or equivalent. {Summer-Fall continuum}

314L. Clinical Nuclear Medicine II. (3) Staff
A continuation of 313 with laboratory practice in organ imaging, blood flow studies, kinetic studies, and ventilatory function. Prerequisite: 313; corequisite: 291 or equivalent. {Fall}

315. Clinical Nuclear Technology I. (3) Appledorn
The student is assigned to a rotational schedule in the clinical laboratories of an approved, affiliated teaching hospital. The student will gain experience performing diagnostic examinations with a variety of nuclear medical instruments. Corequisite: 313. {Summer}

316. Clinical Nuclear Technology II. (6) Appledorn, Staff
A continuation of student rotation through the division of nuclear medicine in the affiliated teaching hospitals. Prerequisite: 315. {Fall}

317. Clinical Nuclear Technology III. (6) Appledorn, Staff
A continuation of student rotation through the division of nuclear medicine in an affiliated teaching hospital. Prerequisite: 316. {Spring}

321. Nuclear Radiation Biology. (2) Staff
Interaction of alpha, beta, gamma, and high LET particle radiations from nuclear interactions and disintegrations with biologic material. Prerequisite: 201. {Spring}

322. Radionuclide Therapeutics. (1) Staff
Principle and practice of therapy and benign and malignant disease with therapeutic radionuclide preparations. Prerequisites: 313, 314L. {Spring}

341. Nuclear Instrumentation I. (3) Appledorn
Principles and demonstrations of ionization chambers, G-M tubes, scintillation and solid-state detectors, pre-amplifiers,

amplifiers, pulse height analysis, and read-out instrumentation. Prerequisite: 201. {Fall-Spring continuum}

342L. Nuclear Instrumentation II. (4) Appledorn
A continuation of 341; principles and theory of tomographic techniques of imaging. Lab practice in set-up, calibration, routine, and special uses of standard nuclear medical instrumentation. Computer processing of data and image manipulation.

352L. Radioimmunoassay Laboratory. (3) Calalang, Staff
Laboratory investigation of competitive binding assay and radioimmunoassay of hormones, mediators, and drugs. Pre- or corequisite: Pharm 416. {Fall, Spring}

391. Special Problems. (1-3) Staff
Supervised investigation in radiopharmaceutical effects and tissue localization. Pre- or corequisites: 311L, 341-342L, Pharm 412. {Fall, Spring}

MODERN AND CLASSICAL LANGUAGES

PROFESSORS S. R. Ulibarri, Ph.D. (Chairperson); D. Cvitanovic, Ph.D.; P. H. Fernández, Ph.D.; A. González, M.A.; J. Kolbert, Ph.D.; R. R. MacCurdy, Ph.D.; M. R. Nason, Ph.D.; W. H. Roberts, Ph.D.; A. Rodriguez, Ph.D.; C. M. Senninger, Ph.D.; J. E. Tomlins, Ph.D.; J. E. White, Jr., Ph.D.; ASSOCIATE PROFESSORS G. D. Bills, Ph.D.; J. J. Bergen, Ph.D.; E. T. Book, Ph.D.; B. Hannemann, Ph.D.; R. Holzapfel, Ph.D.; T. Holzapfel, Ph.D.; R. C. Jespersen, Ph.D.; E. E. Lamadrid, M.A.T.S.; P. Murphy, Ph.D.; P. K. Pabisch, Ph.D.; G. F. Peters, Ph.D. (Assistant Chairperson and Associate Chairperson of German); W. S. Smith, Ph.D.; J. M. Tolman, Ph.D.; ASSISTANT PROFESSORS D. C. Gerdes, Ph.D.; S. L. Guyler, Ph.D.; B. T. Lindsey, Ph.D.; L. J. Márquez, M.A.T.S.; P. S. Mellon, Ph.D.; R. Welsh, M.A.; LECTURER G. M. Slavin, Ph.D.; PART-TIME INSTRUCTORS M. K. Barrett, Abitur; L. Hoshour, B.A.; E. Robert, Abitur; P. Wu, B.A.

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. 139.

MODERN LANGUAGES

No major or minor study offered.

223-224. The Big Questions. (3)
(See Engl 223-224.)

292L. Introduction to Linguistic Analysis. [Introduction to the Study of Language] (3)
(See Ling 292L.)

***457. Special Topics in Modern Languages.** (3) ‡

***478. Seminar in International Studies.** (3) Slavin
(Also offered as Econ 478, Geog 478, Pol Sc 478, 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 Sec Ed 480.)

497. Undergraduate Problems. (1, to a maximum of 6)
Permission of instructor required.

***515. Medieval Paleography.** (3) White

***516. Old Provençal-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 Literatures.** (1-6)‡
(Also offered as Comp Lit 580.)

AMERICAN INDIAN LANGUAGES

APACHE

§§105. **Reading and Writing Jicarilla Apache.** (3)
For native speakers of Apache only. Emphasis on development of literary skills and use of Apache language and culture in the classroom.

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. [203-204] **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 maximum of 6)
Permission of instructor required.

***551. Graduate Problems.** [Problems] (1-6 hrs. per semester)
Permission of instructor required.

QUECHUA

No major or minor study offered.

***311-312. Introduction to Quechua.** (3, 3) Bills
Emphasis on the grammatical structure of Bolivian Quechua. Permission of instructor is required and a 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. (3, 3) Staff

201-202. Intermediate Chinese. (3, 3) Staff
201 or equivalent is prerequisite for 202.

497. Undergraduate Problems. (1, to a maximum of 6)
Prerequisite: permission of instructor.

CLASSICS

MAJOR STUDY

12 hours in Latin courses numbered above 200, including 303 and 304; 9 hours in Greek courses numbered above 250; Hist 313, 314; and two of the following: Phil 201, Art Hi 350, Anth 391.

§§Offered through Continuing Education at Dulce.
§Offered at The University of New Mexico Gallup Branch only and on-site Teacher Training Project.

MINOR STUDY

Not offered.

COMPARATIVE LITERATURE

The major in comparative literature is an interdepartmental major administered jointly by the Department of English and the Department of Modern and Classical Languages. See pp. 138-139.

FRENCH

MAJOR STUDY

30 hours in French courses numbered above 290, including 301, 302, 345, 346, 351, 352, 405; and two years of college work in another foreign language (or reading knowledge).

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.

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

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 reading.

201-202. Intermediate French. (3, 3)
201—study of three modern French film classics. At least ⅔ 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.

265-266. French Reading for Graduate Students. (3, 3)
Accelerated course for graduate reading requirements. 265 emphasizes fundamentals of grammar; 266 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Undergraduates may not enroll without permission of instructor.

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 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.

***335. French Literature in Translation.** (3) Kolbert, 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. Prerequisite: 202 or the equivalent.

***351-352. Survey of French Literature.** (3, 3) Murphy, Senninger, White
351—origins to 1800; 352—1800 to present.

***401. French Stylistics and "Explication de Textes."** (3) Kolbert, Senninger
Analysis of texts of poetry, prose, and drama, and review of literary movements. Required for the M.A. degree.

***405. French Phonology.** (3) Book
Phonetic and phonemic system of French. Required for the undergraduate major.

***411. French Poetry of the Renaissance.** (3) Kolbert
Development of French poetry from Marot through M. Régnier with special stress on La Pléiade (Du Bellay and Ronsard)

***412. French Non-Poetic Literature of the Renaissance.** (3) Kolbert, 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, Molière, 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 Eighteenth 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 Sec Ed 440.) Prerequisite: Sec Ed 351. Does not count for the French major or minor. {Spring}

***441. French Prose Fiction of the Nineteenth Century.** (3) Book, Kolbert
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 d'art of Paul Fort.

***443. Practicum in Nineteenth-Century French Theatre.** (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, Kolbert
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.** (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) Kolbert, Senninger
460—to 1800; 461—since 1800.

***490. Seminar in French Literature.** (3)‡

Combination undergraduate-graduate seminar. 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

***505. Introduction to Research Methods. (1)** Kolbert, Senninger
Required for the M.A. degree.

***510. History of French Literary Criticism. (3)** Kolbert
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. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

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
   - 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
   - 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.

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.

110. Individualized Basic German. (2-6) Hannemann
A self-study course utilizing instructional material designed for individualized learning. Completion of 3 hours of 110 is equivalent to 101; completion of 6 hours of 110 is equivalent to 101-102. Prerequisite: permission of instructor.

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 or 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 265-266 and 275-276.

265-266. German Reading for Graduate Students. (3, 3) Staff
Accelerated course for graduate reading requirements. 265 emphasizes fundamentals of grammar; 266 emphasizes readings in sciences and humanities. Will not satisfy A&S language re-

quirement. Prerequisite: permission of instructor (undergraduates only).

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. Prerequisite: permission of instructor.

***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.

***405. Advanced Grammar and Phonology.** (3)

***445. Teaching of German.** (3) Jespersen
(Also offered as Sec Ed 445.) Does not count for the German major or minor.

446. The Art of Translating. (3) Welsh
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." Does not count for the major or 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

***345. Introduction to German Civilization.** [German Civilization] (3) Welsh
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.** [401-402] **Contemporary German Cultures.** [Contemporary Germany] (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.** [Special Topics in German Literature] (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 Continuing Education at 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.

***470. German Stylistics.** (2-4) Staff
Intensive study of German prose styles. Extensive writing practice.

***485. Advanced 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 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.)

***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)‡ Mellon, 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.

***307. Introductory Readings in Prose.** (3) Guyler
Prerequisite: 276 or equivalent.

***308. Introductory Readings in Poetry.** (3) Guyler
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 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)

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)‡** Mellon, Smith
Topic will deal with individual authors, genres, or periods.

***351-352. Latin for Language Students. (3, 3)**
A comparative study of Latin and its relationship to modern languages for upper-division and graduate students; 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.

277-278. Portuguese Drill. (2, 2)
Corequisite: 275-276.

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)**
{Fall, Spring}

***421. Modern Brazilian Drama. (3)**
Representative plays from the eighteenth century to the present.

***446. Luso-Brazilian Civilization. (3)**

***451.** [*351] **Survey of Portuguese Literature. (3)** Tomlins
Representative readings from the medieval **Cancioneiros** to Modernism and later trends.

***452.** [*352] **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.** [*357] **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.** [*358] **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.** [*361] **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.** [*362] **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.** [*365] **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; **Camões** and the lyric, the drama, and the epic; Erasmian humanism.

***496.** [*396] **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. (1-9 hrs. per semester**
See the Graduate School 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. (3, 3)

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
Pre- or corequisite: 201-202. For intermediate students who wish to improve speaking and writing skills. May be repeated to a maximum of three hours credit.

265-266. Russian Reading for Graduate Students. (3, 3)
Accelerated course for graduate reading requirements. 265 emphasizes fundamentals of grammar; 266 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Prerequisite: permission of instructor (undergraduates only).

***301. Advanced Russian. (3)** Lindsey
Vocabulary building, basic grammar review, and special attention to idiomatic Russian. Readings from recent Soviet literature. Prerequisite: 202 or equivalent.

***302. Contemporary Russian.** [Translating Russian] **(3)**
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)‡**
Intensive practice in Russian conversational patterns and contemporary slang leading to moderate fluency. Prerequisite: 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
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
(Also offered as Comp Lit 340.) Topics will deal with individual authors, genres, or periods.

***343. Soviet Literature in Translation.** (3)
(Also offered as Comp Lit 343.) Readings in Russian literature since the revolution: Sholokhov, Maiakovski, Babel, Pasternak, Solzhenitsyn.

***345. Russian Civilization.** (3) 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.

***401-402. Russia Today.** [Contemporary Russia] (3, 3) Lindsey
Current language and literature including samizdat.

***490. Seminar in Russian Literature.** [Special Topics in Russian Literature] (3)‡ Lindsey
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

30 hours in Spanish courses numbered above 290, including 301-302, 351, 352 or 358, 340, **at least nine additional hours of literature courses from Section III below,** and completion of work in another foreign language at the level of 202 or 276 (or reading knowledge). It is recommended that students who do not speak Spanish natively take 203 concurrently with 201 or 202.

MINOR STUDY

15 hours in Spanish courses numbered above 290, including 301-302, **and at least six additional hours of literature courses from Section III below.**

PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES

Normally students with two years of high school Spanish will take the second semester course (102 or 112); students with three years will take the third semester course (201 or 211); students with four or more years will take the fourth semester (202 or 212) or higher course. However, the student may elect to begin with the first semester course (101) with full credit. There is no placement test.

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) Lamadrid, 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.

112. Elementary Spanish for Spanish Speakers. (3) Márquez, 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.

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.

203. Intermediate Spanish Conversation. (3) Bergen, Staff
Extra oral practice in small classes for non-native speakers. Pre- or corequisite: 201 or 202.

205. Spanish Commercial Correspondence. (2)

207. Conversational Spanish. (3)

211-212. Intermediate Spanish for Spanish Speakers. (3, 3) Márquez, 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. 211 or equivalent is prerequisite for 212.

265-266. Spanish Reading for Graduate Students. (3, 3) Bills, Staff
Accelerated course for graduate reading requirements. 265 emphasizes fundamentals of grammar; 266 emphasizes readings in sciences and humanities. Will not satisfy A&S language requirement. Prerequisite: permission of instructor (undergraduates only). {Offered upon demand}

275-276. Accelerated Beginning Spanish. (3) Bills, Staff
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. Professional Spanish. (3, 3) Márquez, Staff
Intensive course for overseas field researchers and technical program staff; attention to specialized professional vocabularies. Restricted to faculty, staff, and doctoral candidates in Latin American fields. Prerequisite: permission of instructor.

***301. Advanced Grammar and Composition.** (3)
Thorough review of grammar and usage, with readings, conversation, expository writings. Prerequisite: 202 or 212 or equivalent.

***302. Advanced Composition and Conversation.** (3)
Emphasis on oral and written expression, with readings and literary criticism. Pre- or corequisite: 301 or equivalent.

***315. Creative Writing for New Mexico Spanish Speaking Students.** (3) Ulibarri
Writing of original short stories and poems, with emphasis on use of New Mexican Spanish. Prerequisite: 302. {Spring}

***401. Spanish Stylistics.** (3) Fernández
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) Bills
Introduction 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. Prerequisites: 302 and Ling 292 or equivalents. {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 Sec Ed 361. {Fall}

***441. Teaching of Spanish.** (3) Lamadrid
(Also offered as Sec Ed 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 graduate degrees. Suggested pre- or corequisite: 340. {Fall}

***443. Spanish Morphology.** (3) Bergen
Introduction to linguistics and applied 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, Márquez
At least two semesters required of all new teaching assistants in Spanish; others by permission of instructor only.

***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

292. Introduction to Hispanic Literature. [Introduction to Spanish Literature] (3) Ulibarrí
Panoramic view of Spanish literature and literary criticism from beginning to present. Prerequisite: 202 or 212 or equivalent.

Spanish 292 or equivalent is prerequisite for all literature courses below except 334 and 337.

A. PENINSULAR LITERATURE

***337. Spanish Literature in Translation.** (3) MacCurdy, Rodríguez
Does not count for the Spanish major or minor.

***351-352. Survey of Spanish Literature.** (3, 3) Fernández, Guyler, MacCurdy
351—eleventh to seventeenth centuries; 352—eighteenth, nineteenth, and twentieth centuries.

370. Topics in Spanish Literature. (3)‡
For undergraduates only. Variable topics will deal with individual periods or genres.

***415. Eighteenth-Century Spanish Literature.** (3) Rodríguez
Major authors and works.

***416. Nineteenth-Century Spanish Novel.** (3) Fernández, Rodríguez
Analysis of development from costumbrista and romantic novels to regional and naturalistic novels.

***417. Major Figures from 1898 to 1936.** (3) Fernández
Twentieth-century Spanish literature from Modernism and Generation of '98 to post-Civil War writers. {Fall}

***418. Spanish Novel Since the Civil War.** (3)
Major novelists of the post-Civil War and contemporary generations.

***419. Spanish Poetry.** (3) Ulibarrí
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 Calderón, 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.

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)‡ Fernández, MacCurdy

***522. Seminar in Spanish Poetry.** (3) Ulibarrí

***523. Seminar in the Twentieth-Century Spanish Essay.** (3) Fernández

***524. Seminar in the Spanish Novel.** (3)‡ Fernández

***529. Seminar in Spanish Literature.** (3)‡

B. SPANISH AMERICAN LITERATURE

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) Cvitanovic, 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) Roberts
Careful study of Rubén Darío 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) Cvitanovic, Nason
Nativist literature, with special attention to prose fiction, from mid-nineteenth to mid-twentieth centuries.

***434. Literature of the River Plate Region.** (3) Cvitanovic, Nason
Major literary works and movements of Argentina and Uruguay.

***435. Twentieth-Century Spanish American Novel until 1940.** (3) T. Holzapfel, Nason
Survey of major trends in early twentieth-century prose fiction.

***436. Twentieth-Century Spanish American Novel since 1940.** (3) Cvitanovic, 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 American 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) Roberts

***532. Seminar in Twentieth-Century Spanish American Fiction.** (3)‡

***533. Seminar in Spanish American Essay.** (3) Cvitanovic

***539. Seminar in Spanish American Literature.** (3)‡

IV. CIVILIZATION AND FOLKLORE

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) Fernández, Ulibarrí
{Fall}

***346. Ibero-American Civilization.** (3) Cvitanovic, Márquez
Development of European culture in Latin America and fusion with indigenous cultures. Taught in Spanish. {Spring}

***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. Master's Thesis. (1-6 hrs. per semester)**
See Graduate School Bulletin for total credit requirements.

***699. Dissertation. (1-9 hrs. per semester)**
See Graduate School Bulletin for total credit requirements.

SERBO-CROATIAN

101-102. Elementary Serbo-Croatian. (3, 3)
Offered at Gallup Branch only.

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. [254] **Intermediate Swahili Conversation. (3)**
Prerequisite: 102. {Offered upon demand}

497. Undergraduate Problems. (1, to a maximum of 6)
Prerequisite: permission of instructor.

MUSIC

PROFESSORS W. E. Rhoads, M.M.E. (Chairperson); J. Batcheller, Ph.D.; L. Felberg, M.M.; D. C. McRae, M.A.; G. Robert; M. Schoenfeld, M.M.; ASSOCIATE PROFESSORS F. Bowen, B.M.; S. Daniel, M.M.E.; J. de Keyser, B.M.; H. Garcia, B.A.; H. Levinson, D.M.A.; W. Seymour, Ed.D.; J. Snow, M.M.; W. Wood, D.M.A.; ASSISTANT PROFESSORS J. Clark, M.A.; A. Edwards, Dipl.; K. Hinterbichler, D.M.A.; S. Patrick, Ph.D.; D. Randall, B.F.A.; J. Rosenberg, M.M.; W. Selby, M.M.; H. Van Winkle, M.M.E.; S. Wilkinson, M.M.; F. Williams, M.M.; INSTRUCTORS R. Angel, M.M.; and new and part-time appointments to be made.

MAJOR STUDY

For curricula leading to the Bachelor of Music, Bachelor of Arts in Fine Arts, and Bachelor of Music Education, see pp. 67-69.

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 371-372; 4 hours in applied music; and 2 hours of electives in music.
2. For a minor in music education see p. 52.

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.

COURSES FOR NONMAJORS

139. Music Appreciation. (3)
A nontechnical course designed to expand the student's ability to listen actively. Repertoire includes compositions from the chamber music and symphonic literature. {Fall and alternate summers}

140. Music Appreciation. (3)
A nontechnical course designed to expand the student's ability to listen actively. Repertoire includes compositions from the symphonic, chamber music, and vocal literature and is entirely different from that presented in course 139. {Spring and alternate summers}

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}

295. Music in Recreation. (2)
Social foundations and practices of music in recreation. Emphasis on equipping the recreational leader with effective means to deal musically with children and adults. Covers all phases of public performance from planning to production. {Fall}

296. Music in Recreation. (2)
Prepares the major in recreational leadership for practical supervision of recreational music programs covering appreciation of music, music in the hospital as entertainment and therapy, music in the industrial plant, and music in the community center. Prerequisite: 295. {Spring}

371. General History of Music. (3)
From antiquity through the Baroque. Nontechnical study of the forms, styles, schools, principal composers, and representative masterpieces of each era. {Fall}

372. General History of Music. (3)
The Classical, Romantic, and modern eras. Nontechnical study of the forms, styles, schools, principal composers, and representative masterpieces of each era. {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}

110. Group Voice II. (1)
Prerequisite: 109. {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. Audition required.

114. Mexican Guitar. (1)
Continuation of 113. Audition required.

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. 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}

§Open only to graduate students and to undergraduates enrolled in preprofessional curricula of the College of Fine Arts. Exceptions may be made with permission of the Chairperson of the Department. Graduate credit allowed only when asterisk appears.

CONDUCTING

§363. **Conducting.** (2)
Basic theory and techniques of conducting. Prerequisites: 206, 208, junior standing in the major field, piano and voice proficiency examinations. {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. {Alternate summers}

*565. **Advanced Instrumental Conducting.** (2)
Prerequisites: 363 and 453 or the equivalent. {Alternate summers}

ENSEMBLE

#143. **University Chorus.** (1)
Mixed Chorus. Open to all University students. {Fall, Spring}

230. **Opera Studio.** (1)†
Basic training in music theater. Open by audition to singers, conductors, pianists, stage directors, and producers. {Fall, Spring}

231. [331] **Chamber Music.** (1)†
Practice, performance, and study of chamber music in various ensemble groups. {Summer, Fall, Spring}

#233. [#333] **Symphony Orchestra.** (1)
Study and public performance of symphonic literature. Auditions required. {Fall, Spring}

#241. [#341] **University Band.** (1)
Study and performance of concert band literature. Marching band required of wind and percussion concentrates in music education during freshman and sophomore years. {Fall, Spring}

#243. [#343] **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

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}

§*499. **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: 261, 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 Literature.** (2)
Choral music from Gregorian Chant to the present. Prerequisites: 261, 262. {Summer}

§*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)
{Fall}

*533. **Seminar in Music.** (3)†
Subject matter determined by instructor and class. {Spring}

*537. [*437] **Selected Topics in Music Literature.** [Special Studies 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.** [Fundamentals of Music Theory] (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}

104. **Ear-Training I.** [Basic Ear-Training] (2)
Aural apprehension of materials learned in Music 103 through sight-singing, rhythmic and melodic dictation. Credit not allowed toward a major in music or music education. 103 and 104 must be taken concurrently. {Summer, Fall}

105. **Music Theory II.** [Music Theory I] (2)
Fundamentals of music: scales, key signatures, intervals, triads, simple four-part writing. Prerequisite: adequate score on music theory placement test or completion of Music 103 with a grade of A. {Fall, Spring}

106. **Music Theory III.** [Music Theory II] (2)
Diatonic part-writing and analysis: inversions, dominant seventh chords, nonharmonic tones, simple modulation, secondary dominants. Prerequisite: 105 with grade of C or better. {Summer, Spring}

107. **Ear-Training II.** [Ear-Training I] (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.** [Ear-Training II] (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.** [Music Theory III] (2)
Chromatic alterations and analysis: chorale harmonization, remote modulation. Prerequisite: 106 with grade of C or better. {Fall}

206. **Music Theory V.** [Music Theory IV] (2)
Continued chromatic alterations and analysis. Prerequisite: 205 with grade of C or better. {Spring}

207. **Ear-Training IV.** [Ear-Training III] (2)
More advanced singing and dictation, correlated with the

§ Open only to graduate students and to undergraduates enrolled in preprofessional curricula of the College of Fine Arts. Exceptions 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.

materials of 205. Prerequisite: 108 with grade of C or better. {Fall}

208. Ear-Training V. [Ear-Training IV] **(2)**
Continuation of advanced singing and dictation. Prerequisite: 207 with grade of C or better. {Spring}

305. Composition I. (2)
Beginning compositional techniques. Prerequisites: 206 and 208. {Fall}

306. Composition II. (2)
Beginning compositional techniques. 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, 261, 262. {Fall}

§*405. Counterpoint. (2)
Analysis and writing in the style of the sixteenth century. Prerequisites: 206, 208. {Fall}

§*406. Counterpoint. (2)
Analysis and writing in the style of the eighteenth century. Prerequisites: 206, 208. {Spring}

§409. Composition. (2)
Techniques and procedures in the composition of music. Prerequisite: 309. {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. Prerequisite: 309. {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}

***563.** [*463] **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: 309. {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

§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 School Bulletin for total credit requirements.

MUSIC EDUCATION

CURRICULUM

See pp. 68-69.

MINOR STUDY

2 hours in music theory
4 hours in piano
2 hours in ear-training
2 hours in voice or another instrument
2 hours in ensemble
10 hours minimum in which each of the following areas is represented: music history or appreciation, music education, electives in music or music education.

194. Introduction to Music Education. (1)
Designed to assist the student in discovering his 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. {Summer, Fall, Spring}

294. Teaching Music in the Elementary Schools. (2)
(Also offered as Spec Ed 294.) Prerequisite: 293 for non-music majors; 194 for music majors. {Summer, Fall, Spring}

297. Music for Special Education. (2)
(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 disturbed children.

313. Organization and Function of Secondary School Music Ensembles. [Administration of Choral and Instrumental Music] **(2)**
Administration and organization of programs for chorus, band, and orchestra in the secondary schools. Includes a survey of music literature and methods of selection and purchase of equipment related to each ensemble. Prerequisites: 294 and junior standing in music. {Fall}

344. Supervision of Music in the Public Schools. [Supervision of Music in the Elementary Schools] **(2)**
The role of the music consultant, curriculum development, and materials of instruction. Prerequisite: 294. {Spring}

366. Beginning Student Teaching in Music. (2)
Orientation in practice teaching. Prerequisites: 294, admission to student teaching, and junior standing in music. {Spring}

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
See Department of Music Handbook for prerequisites. {Fall, Spring}

***429. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 71 of this catalog or consult the Graduate School Bulletin. {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 school, kindergarten, and 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. {Fall}

***446. Secondary School Music. (2)**
Students, music curricula, methods and materials in secondary schools. Prerequisite: junior standing. {Spring}

***451. Foundations of Musical Behavior. (3)**
Acoustics, perception, learning, and affective response in musical behavior. Prerequisite: junior standing. {Fall}

***459. Concepts of Teaching Music in the Elementary School. (3)**
Melodic harmonic interpretation, creative writing, directed listening, and movement. Prerequisite: junior standing. {Summer}

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
See Department of Music Handbook for prerequisites. {Fall, Spring}

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)

§Open only to graduate students and to undergraduates enrolled in preprofessional curricula of the College of Fine Arts. Exceptions may be made with permission of the Chairperson of the Department. Graduate credit allowed only when asterisk appears.

See Department of Music Handbook for prerequisites. {Fall, Spring}

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)

***534. Seminar in Music Education. (3)**
{Spring}

***550. Philosophy of Music Education. (3)**
{Offered upon demand}

***551-552. Problems. (1-3 hrs. each semester)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

NATIVE AMERICAN STUDIES

Coordinator (Acting): Gerald Hobson, M.A., Lecturer in English; Assistant Coordinator: Junella Haynes.

Courses offered in the area of Native American Studies help students to understand and appreciate more fully both the cultural heritage received from the native people of the American continents and the distinctive life and culture of contemporary Native Americans. Another function of the program is to guide and assist Native American students in growth toward positions of leadership. To this end 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 tribal scholarships and grants from the Bureau of Indian Affairs.

CURRICULUM

Amer St 221. Southwest Indian Life-styles. (3)

Amer St 301. Interdepartmental Studies in the Culture of the United States. (3)‡
The Indian and the Law.
Seminar: Indian Law.
Pueblo Indian History.
Reservation Economic Development.
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)

Engl 280. Readings in Literature. (3)‡
Introduction to Native American Literature.
Native American Literature.

NATURAL SCIENCE

No major or minor study offered.

125. Natural Science. (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. (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 Leo T. Profilet, USN, M.P.A.; Lt. Col. R. E. Kirkpatrick, USMC, M.S.; Major Jay R. Vargas, USMC, M.A.; Lieutenant G. E. Lipscomb, USN, B.A.; Lt. (jg) D. W. Moore, USN, B.S.

CURRICULUM

See Naval Science Department.

010. Naval Professional Laboratory. (0) Staff
Drills and information for NROTC students. (30 hours each semester)

100. Principles and Concepts of Naval Science. (1)
Introduction to the naval service, customs, traditions, and history.

105. Naval Ships Systems I. (3)
Introduction to naval engineering systems concepts, and practices. Topics include ship design, compartmentation, ship stability, damage control, fire-fighting, and ship propulsion systems with special emphasis on nuclear propulsion systems.

106. Naval Ships Systems II. (3)
Introduction to naval weapons systems, concepts, and practices. Topics include basic types of ammunition, radar principles, gun mounts, fire control systems, missile components, sonar, ASW tactics, and new developments in naval weaponry.

303-304. Navigation and Naval Operations. (3, 3)
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) Vargas
Evolution of the basic principles and techniques of warfare from 490 B.C. to the present time. Emphasis is placed on an understanding of the theoretical principles underlying modern tactics and strategy. {Fall 1978 and alternate years}

407. Principles of Naval Leadership and Management. (3)
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.

409. Flight Instruction. (3)
Aviation meteorology, aerodynamics, principles of flight, federal aviation regulations, aircraft systems, visual and radio instrument navigation, flight publications, emergency procedures, and 15 hours of airborne instruction.

431. Amphibious Warfare. (3) Vargas
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. {Fall 1977 and alternate years}

NURSING

PROFESSORS Marion R. Fleck, Ph.D. (Acting Dean); V. Crenshaw, Ed.D.; B. L. Murray, Ed.D.; ASSOCIATE PROFESSORS J. Baca, M.P.H.; Z. Bray, M.S.N.E.; M. Howard, M.S.N.; ASSISTANT PROFESSORS S. Anderson, M.S.N.; P. Becktell, M.A.; C. Burton, M.S.N.; M. Carpenter, M.S.; I. Collier, M.S.N.; R. Cunico, M.B.A.S.; P. Duphorne, M.N.; N. Fowler, M.N.; C. Harris, M.S.; E. Martin, M.N.Ed.; L. Martinez, M.A.; D. McDonald, M.A.; P. Palmer, M.S.; E. Rosenblum, M.A.; S. Schwanberg, M.S.N.; E. Thomas, M.S.; E. Tuchfarber, M.S.N.; J. Weiss, M.A.; M. Brown, M.N. (part-time); H. Kee, M.S., M.B.A. (part-time) (Associate Dean); M. Nash, M.S.N. (part-time); INSTRUCTORS G. Birkholz, M.Ed.; R. Galvin, M.A.; H. Hamilton, M.S.N.; F. Hatter, M.S.; K. May, M.S.; E. Morosin, M.A.; E. Musci, M.S.; J. Penn, M.A.; H. Reichle, M.S.; J. Solomon, M.S.; LECTURER III D. Shane, M.S.; LECTURER I L. Stoll, B.S.N.; L. Dauenhauer, B.S.N.

CURRICULUM

The College of Nursing will be renumbering the required nursing courses. Please contact the Student Advisement Office for the most recent information.

129. Workshop. (1-3)
An opportunity for nurses to update their knowledge and skills in nursing process in maintenal, preventive, therapeutic, and restorative health care.

131. Nursing Level I. (3)
An introduction to the nursing process with emphasis on assessment of health needs. Pre- or corequisites: Biol 136, 139L, Engl 101, 132L. **Available at the Gallup Branch only.** {Fall, Spring}

132L. Nursing Level I. (3)
Development of basic skills in nursing care centered around the bio-psychosocial needs of man. Together with 131, prepares student to function as a nursing assistant. Corequisite: 131. 9 hrs. lab. **Available at the Gallup Branch only.** {Fall, Spring}

142. Nursing Level II. (4)
Nursing responsibility for maintaining integrity of the system in the development process when disrupted by moderate impairment. Includes concepts related to mental hygiene, rehabilitation, nutrition, pharmacology, and normal pregnancy.

Prerequisites: 131, 132L; corequisites: Engl 102, Psych 101 or 102 and 143L. **Available at the Gallup Branch only.** {Fall, Spring}

143L. Nursing Level II. (4)
Nursing process in implementing nursing care, utilizing selected clients in medical, surgical, obstetrics and pediatric clinical services. Corequisite: 142. 12 hrs. lab. **Available at the Gallup Branch only.** {Fall, Spring}

163L. Nursing Level III. (6)
Nursing practicum to provide application of nursing knowledge and skills learned in previous courses. This course, with the prerequisites, qualifies the student to write the State Board Test Pool Examination for Licensed Practical Nurse. Prerequisites: 142, 143L. 5 lectures, 3 hrs. lab. **Available at the Gallup Branch only.** {Summer}

222. Health Care Delivery Systems. (2)
Introduces the students to the health care delivery system and to the roles of the various members of the health team. Prerequisites: 6 hrs. of communication arts, including a course in expository writing; 12 hrs. of biological and physical sciences, including 3-4 hours integrated organic and biochemistry and Biol I; Psych 102. **Not offered after Spring 1978.** {Fall, Spring}

223. Introduction to Nursing Seminar. (2)
Provides a forum for discussion of professional nursing education, opportunities, challenges, trends, and issues. Introduction to College of Nursing philosophy and conceptual framework. Prerequisite: 222. **Not offered after Spring 1978.** {Fall, Spring}

225. [222-223] **Introduction to Concepts in Nursing.** [Health Care Delivery Systems; Introduction to Nursing Seminar] **(4)**
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}

239L. Nursing Pathology I. [Pharmacy Pathology I] **(3)** Staff
(Also offered as Pharm 239L.) A beginning course in human pathology for pharmacy and nursing students. The course will be presented as an audio-tutorial program. Pre- or corequisites: Biol 237L and 238L. 1 lecture, 3 hrs. lab. {Spring}

240L. Nursing Pathology II. [Pharmacy Pathology II] **(3)** Staff
(Also offered as Pharm 240L.) Continuation of 239L. Pre- or corequisites: Biol 237L and 238L. 1 lecture, 3 hrs. lab. {Spring}

244. Nursing Level IV. (4)
Assessment of nursing needs of patients suffering severe impairment of physiological and psychological states. Prerequisite: 163L. Pre- or corequisites: 245L, Chem 111L, H Ed 247. **Available at the Gallup Branch only.** {Fall}

245L. Nursing Level IV. (4)
Clinical experience with patients suffering severe impairment of physiological and psychological states. Corequisite: 244. 12 hrs. lab. **Available at the Gallup Branch only.** {Fall}

246L. Nursing Level V. (5)
Dynamics of group activity, nursing management, and interpersonal relationships. Opportunity to plan and implement care for groups of patients. Prerequisites: 244, 245L. Pre- or corequisites: Chem 281, Soc 101 or 102. 2 lectures, 9 hrs. lab. **Available at the Gallup Branch only.** {Spring}

255L. Nursing Level VI. (4)
Professional issues in nursing practice; legal aspects of nursing. Pre- or corequisite: 246L. 1 lecture, 9 hrs. lab. **Available at the Gallup Branch only.** {Spring}

297. Independent Study. (1-3)
Prerequisite: permission of instructor. {Fall, Spring}

302L. Clinical Instrumentation. (3)
(Also offered as EE 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 instrumention. {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. {Fall, Spring}

312L. Level II Nursing, A and B. (3-8)
Theoretical study and laboratory application of specialty roles in nursing, leadership-management principles; methods of coping with stress; problem-solving; community resources; research methodology; group dynamics; client-initiated health programs; legislative systems. Relates to clients of all ages in mild disequilibrium. Prerequisite: 311L. {Spring}

313L. Level III Nursing. (4)
Theoretical study and laboratory application of nursing functions in restorative care, principles of management in working with groups; group planning of nursing care; research problems in nursing practice; organizational structure of agencies. Relates to clients of all ages in moderate disequilibrium. Prerequisites: 311L, 312L. {Fall, Spring}

324L. Introduction to Human Development and Basic Skills. (3)
Principles of human growth and development throughout the life cycle and an introduction to nursing skills used in giving nursing care to persons in all age groups. 2 hrs. seminar, 3 hrs. lab.

331. [311] **Level I Nursing. (3)**
Theoretical study and laboratory application of basic roles of professional nursing; principles of health/illness continuum, stress/adaption theories; the nursing process; techniques of communication, teaching-learning principles; and health care delivery systems. Relates to clients of all ages in dynamic equilibrium. Prerequisites: 222, 223, 239, 240, anatomy-physiology, microbiology, pharmacology, interpersonal communication.

332. [311] **Level I Nursing. (3)**
Theoretical study and laboratory application of basic roles of professional nursing; principles of health/illness continuum, stress/adaption theories; the nursing process; techniques of communication, teaching-learning principles; and health care delivery systems. Relates to clients of all ages in dynamic equilibrium. Prerequisites: 222, 223, 239, anatomy-physiology, microbiology, pharmacology, interpersonal communication.

333. [311] **Level I Nursing. (3)**
Theoretical study and laboratory application of basic roles of professional nursing; principles of health/illness continuum, stress/adaption theories; the nursing process; techniques of communication, teaching-learning principles; and health care delivery systems. Relates to clients of all ages in dynamic equilibrium. Prerequisites: 222, 223, 239, anatomy-physiology, microbiology, pharmacology, interpersonal communication.

334. [311] **Level I Nursing. (3)**
Theoretical study and laboratory application of basic roles of professional nursing; principles of health/illness continuum, stress/adaption theories; the nursing process; techniques of communication, teaching-learning principles; and health care delivery systems. Relates to clients of all ages in dynamic equilibrium. Prerequisites: 222, 223, 239, anatomy-physiology, microbiology, pharmacology, interpersonal communication.

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}

414L. Level IV Nursing. (8)
Theoretical and laboratory study of nursing responsibilities directed toward supporting persons in severe disequilibrium in any age group and in relation to family and community. Emphasis on principles relating to management and coordination of nursing care, leadership, change, and decision-making. Evaluation of standards of care, consumer advocacy, and professional accountability will be emphasized in relation to health care delivery. Prerequisite: 312L. {Fall, Spring}

415L. Level V Nursing. (8)
Theoretical and laboratory study of nursing responsibilities directed toward client groups needing preventive, maintenance, or restorative care with an emphasis on the integration of prior knowledge and skill. Acculturation of students to professional nursing practice. Experiences selected by students with faculty guidance. Prerequisite: 414L. {Fall, Spring}

***429. Workshop. (1-6)**
{Offered upon demand}

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}

PALEOECOLOGY

COMMITTEE IN CHARGE: PROFESSORS R. Y. Anderson, Ph.D. (Geology) (Chairperson); J. S. Findley, Ph.D. (Biology); F. C. Hibben, Ph.D. (Anthropology); L. D. Potter, Ph.D. (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 539. 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 307L, 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, 301L, 302L, 331, 421L, 441L, 501L
Math 345-346, 441

GRADUATE MINOR

Requirements are listed in the Graduate School 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.

451-452. Problems in Paleoecology. (2, 2)

***539. Environmental Reconstruction. (3)** Anderson
(Also offered as Geol 539.) Concepts and methods of reconstructing sedimentary environments and ancient ecosystems, from the standpoint of variability of physical, biological, and geochemical parameters. Prerequisite: permission of instructor. {Spring 1977 and alternate years}

***540. Advanced Stratigraphy-Sedimentology. (3)** Anderson, Ingersoll
(Also offered as Geol 540.) Prerequisite: permission of instructor. {Spring}

***551-552. Problems. (2-3 hrs. each semester)**

PHARMACY

PROFESSORS C. A. Bliss, Ph.D. (Dean); W. C. Fiedler, Ph.D.; B. A. Rhodes, Ph.D.; K. H. Stahl, Ph.D. (Assistant Dean); ASSOCIATE PROFESSORS W. M. Hadley, Ph.D.; W. H. Jeffery, Pharm.D.; G. P. Lehrman, Ph.D. (Assistant Dean); J. W. Levchuk, Ph.D.; N. R. Strahl, Ph.D.; W. G. Troutman, Pharm.D.; ASSISTANT PROFESSORS J. L. Born, Ph.D.; J. J. Hermann, Ph.D.; T. S. Johnston, Pharm.D.; W. H. Kelly, Pharm.D.; P. J. Medon, Ph.D.; R. L. Watkins, Ph.D.; S. S. Weber, Pharm.D.; ASSISTANT INSTRUCTORS (part-time) R. F. Adams, B.S.; R. L. Benischek, B.S.; J. W. Bleakly, B.S.; N. B. Levit, B.S.; R. D. Rodman, B.S.; J. K. Samberson, B.S.; CLINICAL INSTRUCTORS (part-time) R. M. Church, Ph.D.; R. D. Counts, B.S.; A. L. Duncan, M.S.; R. D. Gorton, B.S.; N. E. Heltzer, M.S.; R. N. Herrier, Pharm.D.; M. Kurtzman, B.S.; D. J. Lucero, B.S.; J. M. Patten, M.P.H.; C. R. Veach, B.P.H.; ADJUNCT INSTRUCTORS (part-time) N. H. Brown, B.S.; J. R. Roden, B.S.; J. P. Sowell, B.S.; F. A. Tegard, B.S.; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 118.

CURRICULUM

See pp. 82-84.

239L. Pharmacy Pathology I. (2) College of Nursing and School of Medicine Staff
(Also offered as Nurs 239L.) A beginning course in human pathology 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, 3 hrs. lab. {Fall}

240L. Pharmacy Pathology 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}

244. History of Pharmacy. (2) Fiedler
Historical development of pharmacy as a profession. {Spring}

276. Principles of Pharmacology. (3) Medon
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: 237L-238L or 136-139L. (Open only to students in the College of Nursing and in the Dental Hygiene Program.) {Spring, Summer}

291. Pharmacy Orientation. (2) Levchuk
A survey of the profession of pharmacy, with emphasis on aspects of pharmacy education, professional practice, and other career opportunities. {Fall}

292. Socio-Economics of Health Care Delivery. (3) Levchuk, 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. Prerequisite: 291 or permission of instructor. {Spring}

296. O.T.C. Drugs and Products. (3) 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, Summer}

341L. Operative Pharmacy I. (4) Fiedler
Pharmacy technology, including principles and processes involved in formulation and basic manufacturing; a survey of the preparations of pharmacy. Prerequisite: enrollment in the College of Pharmacy; passing grade in Chem 302-304L. Pharm 343 must be taken concurrently with Pharm 341L (but Pharm 343 may be taken before Pharm 341L). 3 lectures, 3 hrs. lab. {Fall}

342L. Operative Pharmacy II. (4) Fieldler
A continuation of 341L. Prerequisite: passing grade in 341L. 3 lectures, 3 hrs. lab. {Spring}

343. Pharmaceutical Calculations. (2) Fiedler
Metrology and the arithmetic involved in compounding and prescription work. (343 is pre- or corequisite for 341L.) {Summer, Fall}

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. {Fall}

392. Pharmaceutical Services and Indian Health Programs. (1-4) Levchuk
Individualized program of studies in the analysis of pharmaceutical services in context with a field study of health care programs for Southwestern Indian population. Prerequisites: 292 and permission of instructor. {Offered upon demand}

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}

412L. Radiopharmacy. (4) Rhodes
Study of radiopharmacy in a clinical surrounding, including principles of radiopharmacy, preparation of radiopharmaceuticals, principles of nuclear medicine, nuclear physics, and health physics as applied to radiopharmacy. Prerequisite: 341L or permission of instructor. 3 lectures, 3 hrs. lab. {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 324, Biol 430, or permission of instructor. {Spring}

417L. Radiopharmacy Rotation I. (2) Bleakly
This rotation is for the student opting the fifth year radiopharmacy option. During this rotation, the student will become actively involved in the service aspect (consulting and filling of prescriptions) of The University of New Mexico College of Pharmacy Radiopharmacy as it relates to the State of New Mexico. 6 hrs. lab per week. {Fall}

418L. Radiopharmacy Rotation II. (3) Rhodes
Rotation through UNM College of Pharmacy Radiopharmacy, BCMC (Department of Nuclear Medicine), Presbyterian Hospital (Department of Nuclear Medicine), and Lovelace Clinic (Department of Nuclear Medicine). Course is acceptable for clinical credit. Prerequisite: 412L. 9 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. Prerequisite: fifth year standing or permission of instructor. {Fall}

422. Pharmacy Law. (3) Lehrman
Laws and regulations relating to the practice of pharmacy. Includes all federal and state drug laws, business law pertinent to pharmacy practice, fair trade laws, 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 B&AS 361.) Prerequisite: fifth year standing or permission of instructor. {Fall}

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. Prerequisite: 421. {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) Jeffery, Johnston, Kelly, Weber
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) Jeffery, Johnston, Kelly, Weber
Continuation of 431. Prerequisites: 475 and 431; corequisite: 476. 3 lectures, 2 hrs. conference. {Spring}

433L. [435L] Clinical Pharmacy Rotations I. [Clinical Pharmacy III] (1-15) Jeffery, Johnston, Kelly, Weber
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. [436L] Clinical Pharmacy Rotations II. [Clinical Pharmacy IV] (1-15) Jeffery, Johnston, Kelly, Weber
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) Staff
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) Jeffery, Johnston, Kelly, Weber
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}

443L. Physical Pharmacy. (4) Hermann
A continuation of 342L with emphasis on the application of physiochemical principles to the study of pharmaceutical dosage forms and the technology involved in their formulation. Prerequsites: Physcs 151-152, 153L, Pharm 342L, grade of C or better in Pharm 343. 3 lectures, 3 hrs. lab. {Fall}

444. Biopharmaceutics. (3) Strahl
Introduction to the relationship of the physical aspects of drug formulation to drug absorption. Elements of drug metabolism, tissue accumulation and elimination are also discussed. Prerequisite: 443L with a grade of C or better. {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: 443L with a grade of C or better. {Spring}

449L. Pharmacokinetics. (3) Strahl
Application of mathematical principles to the evaluation of drug absorption, distribution, and elimination profiles of drugs in man. Prerequisite: 444. 2 lectures, 3 hrs. lab. {Fall}

450. Clinical Pharmaceutics. (3) Strahl
A continuation of Pharm 449L to include the application of pharmacokinetic principles for the evaluation of drug-dosage levels in man. Prerequisite: 449L. {Spring}

451. Institutional Pharmacy Practice. (3) Levchuk
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}

452. Institutional Pharmacy Management. (4) Levchuk
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. {Spring}

453. Hospital and Hospital Pharmacy Administration. (2) Levchuk
Hospital organization, administration, management; functional relationships between the pharmacy department and other hospital departments; study of procurement and allocation of resources to meet institutional health care objectives; current problems and issues. Prerequisite: fifth year standing or permission of instructor. {Fall}

455. Nursing Home Pharmacy. (1) Levchuk
A directed independent study of the roles of the consultant pharmacist, the delivery of pharmaceutical services, and management of the pharmacy program for facilities in which pharmaceutical services are provided by part-time or consultant pharmacists. Prerequisites: fifth year standing and permission of instructor. {Fall}

457L. Hospital Pharmacy Laboratory. (1) Levchuk, Staff
A supervised experience pertaining to distributive and control functions/procedures in selected area hospitals. Corequisite: 451. 3 hrs. lab. {Fall}

459L. Sterile Preparations. (4) Levchuk
Theory and application of principles involved in the formulation, preparation, packaging, sterilization of sterile, pyrogen-free products. Sterile techniques and control procedures are stressed. The fourth optional unit of credit involves the study of parenteral fluid, electrolyte, and nutritional therapy. Prerequisites: fifth year standing and permission of instructor. 2-3 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: Pharm 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 Pharmaceutical 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, Summer}

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, Summer}

467. Chemistry of Natural Products I. (3) Stahl
The study of drugs of biological origin with emphasis on active

constituents, their biosynthesis, structure, properties, and medicinal applications. Prerequisites: 462, 476L. {Fall}

468. Chemistry of Natural Products II. (3) Stahl
A continuation of 467. Prerequisite: 467. {Spring}

475. Pharmacology II. (4) Medon
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) Medon
A continuation of 475. Prerequisite: 475 or permission of instructor. {Spring}

477. Neuropharmacology. [Biological Assays] **(2)** Medon
The study of pharmacotherapeutic agents that affect nervous tissue. In-depth investigations of the biochemical and electrophysiological mechanisms of drugs affecting the central nervous systems. Prerequisites: 475, 476. 2 lectures. {Fall}

479L. Pharmacology Laboratory. (3) Medon
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, Summer}

483L. Biochemical Pharmacology Laboratory. (2) Hadley
The practice of laboratory techniques used in biochemical pharmacology. Particular emphasis is placed on drug metabolism methodology. Prerequisites: 475, 476; corequisite: 485. {Fall}

484L. Toxicology II. (4) Hadley
The study of the sources and effects of environmental contaminants and the effects of acute exposure to higher concentrations of chemicals. Techniques and instruments used in toxicology research will be considered. Prerequisites: 475L and 476L or permission of instructor. 2 lectures, 6 hrs. lab. {Spring}

485. Biochemical Pharmacology Lecture. [Biochemical Pharmacology] **(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. Pollution Toxicology. (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}

492. Drug Education. (2-3) Staff
Interdisciplinary approach, utilizing in-class and out-of-class learning experiences, to the development of knowledge and skills related to the planning and provision of comprehensive community-based drug abuse/misuse programs. (Enrollment for the third unit entails independent study in addition to regular course requirements.) {Spring}

493L. Pharmacy Practice I. (2) Benischek
A directed experience in the Student Health Center Pharmacy. Involves dispensing, compounding, interviewing patients, drug identification, maintaining patient medication histories and other pharmacy records. Prerequisite: fifth year standing. 1 lecture, 3 hrs. lab. {Fall}

494L. Pharmacy Practice II. (2) Benischek
A continuation of 493L to include one (1) hour of lecture, composition to be: Medication Review, Business Communications for Pharmacy Students V, Review of Intravenous Fluid Incompatabilities and Electrolyte Balance, Family Planning Techniques; laboratory to include techniques of professional practice of pharmacy within the Student Health Center. 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, Summer}

PHILOSOPHY

ASSOCIATE PROFESSOR Howard N. Tuttle, Ph.D. (Chairperson); PROFESSORS P. F. Schmidt, Ph.D.; F. Sturm, Ph.D.; ASSOCIATE PROFESSORS H. Eilstein, Ph.D.; C. McDermott, Ph.D.; ASSISTANT PROFESSORS M. Casalis, Ph.D.; R. Goodman, Ph.D.; D. Lee, Ph.D.; B. O'Neil, Ph.D.; F. Schueler, Ph.D.; C. Stern, M.Phil.

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 or economics-philosophy or 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. 118.

MAJOR STUDY

30 hours, which may include 6 hours at the 100 level if taken at the beginning, and of which 24 hours must be distributed as follows: 201 and 202, 6 hours; 256, 257, 3 hours; 358, 3 hours; 441 and 442, 6 hours; one course taken from 352, 354, 356, 385, 3 hours; and one course taken from 365, 367, 380, 445, 455, 465, 470, 3 hours.

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.

MINOR IN RELIGIOUS STUDIES

18 hours, of which 9 must be in philosophy and 9 must be distributed among three other departments. Courses that will satisfy this minor are Phil 231, 232, 263-264, 304, 334, 336, 365, 441 (when topic is appropriate), 442 (when figure is appropriate); Anthro 398, 399; Arch 261; Art Hi 270, 351, 352; Engl 341; Hist 311, 325, 337; Greek 101-102; Music 476; Soc 422. (Sanskrit and Hebrew will also satisfy when they become available at UNM.)

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," pp. 138-139.

101-102. Humanities. (3, 3)
Comparative introduction to the development of human civilizations emphasizing philosophic thought, religious practice, and artistic expression.

105. Introduction to Chicano Thought. (3) Mondragon
Backgrounds of Chicano culture, including Spanish, Indian, French, and Anglo philosophical orientation.

110. [100] **Introduction to Philosophical Problems. (3)**
Selected problems in values, knowledge, and reality. Social, political, and religious philosophy.

145. Thought and Expression. (3)
Processes of communicating, symbolizing, thinking abstractly, imagining, generalizing, defining, and inferring.

201. Ancient European Philosophy. (3)
A historical study, especially of Greek philosophy.

202. Modern European Philosophy. (3)
A historical study from the Renaissance through Kant.

231. Old Testament. (3)
Old Testament. Hermeneutic analysis of Scripture.

232. New Testament. (3)
Hermeneutic analysis of Scripture.

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.

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. Philosophy of Science. (3)
Selected ontological and methodological problems of empirical sciences. Prerequisite: 253 or 255 or 257.

255. Scientific Method. (3)
Meaning and verification, scientific truth, hypotheses, models, empirical evidence, measurement, induction and probability, statistical knowledge.

256. Introduction to Logic. (3)
Fallacies of argument; traditional forms of deductive and inductive inference.

257. Introduction to Symbolic Logic. (3)
Methods and techniques of modern logic.

263. Eastern Religions. (3)
Confucian, Taoist, Buddhist, and Hindu religions.

264. Western Religions. (3)
Judaic, Christian, Moslem, and Humanist religions.

301-302. Interdepartmental Studies in the Culture of the U.S. (3, 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)‡

***323-324. [*323] Latin American Philosophy.** [Hispanic and Latin American Philosophy] (3)
323—pre-Columbian thought through Independence ideologies. {Fall} 324—positivism through contemporary thought. {Spring}

***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. Chinese Philosophy.** (3)
Confucian, Taoist, Mohist, Legalist schools, and their influence on Buddhist and modern developments.

***337. Topics in Chinese Philosophy.** (3)‡

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 to twentieth century. Prerequisite: one previous philosophy course.

***346. Twentieth-Century Philosophy.** (3)†
Twentieth-century philosophies. Prerequisite: 110 or 202 or 256 or 356 or permission of instructor.

***348. Comparative Philosophy.** (3)
Examination of conflicting ideals and presuppositions of Buddhist, Chinese, European, and Indian philosophies. Prerequisite: acquaintance with the history of these philosophies.

***350. Introduction to Philosophic Problems of Physics.** (3)
Introduction to philosophical problems concerning space, time, laws of nature, causality, in the light of fundamental theories of physics.

***352. Theory of Knowledge.** (3)
Problems and theories of epistemology. Prerequisite: 110 or 202 or 256 or 356 or permission of instructor.

***354. Metaphysics.** (3)
Theories of reality. Prerequisite: 201 or 202 or 256 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: 257. {356—Fall, 357—Spring}

***358. Ethical Theory.** (3)
Inquiry concerning goodness, rightness, obligation, justice, and freedom. Prerequisite: one previous philosophy course.

***365. Philosophy of Religion.** (3)
Philosophic analysis of some major concepts and problems in religion.

***367. Philosophy of Art and Aesthetics.** (3)
Concepts and theories about aesthetic experience and judgment; artistic meaning and evaluation.

***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.

***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 256 or 356 or permission of instructor.

***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)‡
Mainly problems concerning space, time, causality. Selected epistemological problems. Prerequisite: 253 or 254 or Math 102 or Physcs 102.

***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.

***455. Philosophy of the Natural Sciences.** (3)
Critical examination of methods and concepts of the natural sciences.

***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 hrs. of literature and 3 hrs. of philosophy from the courses specified as requirements for the program.

***485. Philosophical Foundations of Economic Theory.** (3)
(Also offered as Econ-Phil 485.) Prerequisite: Econ 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.)

***514. Survey of Contemporary Schools of Sociological Theory II.** (3)
(Also offered as Soc 514.) {Spring}

***526. Seminar in Asian Philosophers.** (3)‡

***541. Seminar in Philosophical Movements.** (3)‡

***542. Seminar in Individual Philosophers.** (3)‡

***543. Seminar on the Problems of Space, Time, Causality.** (3)‡
Prerequisite: 253 or 254 or 354 or 443 or Math 102 or Physcs 102.

***551. M.A. Problems.** (1-3 hrs. per semester)‡

***599. Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

***651. Ph.D. Problems.** (1-3)‡

***654. Ph.D. Seminar in Metaphysics.** (3)

***655. Ph.D. Seminar in Epistemology.** (3)

***656. Ph.D. Seminar in Logical Theory.** (3)
Prerequisites: 257 and 356 or equivalents.

***658. Ph.D. Seminar in Value Theory. (3)**

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

PHILOSOPHY-ECONOMICS

See Economics-Philosophy.

PHILOSOPHY-ENGLISH

See English-Philosophy.

PHYSICAL EDUCATION

See Education, Health, Physical Education, and Recreation.

PHYSICAL SCIENCE

No major or minor study offered.

261-262. Introduction to Physical Science. (3, 3)
Prerequisite: permission of instructor.

PHYSICS AND ASTRONOMY

PROFESSORS V. H. Regener, Dr.-Ing. (Chairperson); H. S. Ahluwalia, Ph.D.; S. S. Alpert, Ph.D.; C. L. Beckel, Ph.D.; H. C. Bryant, Ph.D.; C. Dean, Ph.D.; J. R. Green, Ph.D.; J. L. Howarth, Ph.D.; M. H. Hull, Jr., Ph.D.; D. S. King, Ph.D.; C. P. Leavitt, Ph.D.; A. W. Peterson, Ph.D.; D. B. Swinson, Ph.D.; R. Thomas, Ph.D.; RESEARCH PROFESSOR J. Linsley, Ph.D.; ASSOCIATE PROFESSORS C. Chandler, Ph.D.; B. D. Dieterle, Ph.D.; J. D. Finley III, Ph.D.; D. M. Wolfe, Ph.D.; ASSISTANT PROFESSOR M. Zeilik II, Ph.D.; ADJUNCT PROFESSOR J. Linsley, Ph.D.; LECTURERS L. M. Kieffaber, Ph.D.; J. R. Place, Ph.D.

Explanation of footnotes not indicated will be found on p. 118.

Prerequisite to major and minor study in physics and in astrophysics are the basic courses Physcs 160, 161, 163L§, 262, 264L§, and Math 264, 265; 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; therefore, advisement is to be arranged through the departmental office early in the student's career of study.

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

Physcs 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

Physcs 301, 302, 303, 304, 305; Astr 370, 371, 3 hours of astronomy courses numbered above 299; Math 316 or 361.

MINOR STUDY IN ASTROPHYSICS

Physcs 302; Astr 270, 271, 3 hours of astronomy courses numbered above 299; 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) King, 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) 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 102. Introduction to Physics. (3) Ahluwalia, Dean, Howarth, Regener, 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. {Summer, Fall, Spring}

Physcs 103. Meteorology. (3) Green
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. {Fall, Spring}

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. (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) Dean, 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

§Not required for the minor study in astrophysics.

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) Regener
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) Green
Practical experience with meteorological observations, charts, and weather maps. Pre- or corequisite: Physcs 103. 2 hrs. lab. {Fall, Spring}

Physcs 116L. 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) Dean, 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, Dean, Green, Howarth, Thomas
Kinetic theory; specific heats; conduction, convection, radiation; change of state; classical thermodynamics. {Fall}

****302. Optics.** (3) Alpert, Bryant, Dean, Finley, Green, Howarth, Leavitt, Thomas
Geometrical optics; wave theory of light; Fresnel and Fraunhofer diffraction; polarization; dispersion, absorption, and scattering. {Spring}

****303-304. Analytical Mechanics.** (3, 3) Alpert, Bryant, Dean, Finley, Green, Leavitt, Thomas
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, Dean, Dieterle, Green, Howarth, Thomas
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, Bryant, Dieterle
Heat, electricity, electronics, optics. 1 lecture, 3 hrs. lab. each semester. {307L—Fall, 308L—Spring}

****330. Atomic and Nuclear Physics.** (3) Ahluwalia, Alpert, Bryant, Dean, Dieterle, Green, Leavitt, Place, Swinson
Special relativity, quantum effects, atomic structure, X-rays, nuclear structure and nuclear reactions, instruments of modern physics. Prerequisite: 262 or equivalent. {Fall, Spring}

***400. Seminar. (1 hr. per semester)**
{Fall, Spring}

***403. Acoustics.** (3) Dean
General wave phenomena, studied through applications in acoustics. Topics in radiation, absorption, interference, acoustical holography. {Offered upon demand}

***430. Physics of Matter.** (3) Dean, Green, 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. {Fall}

***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) Howarth
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
Adiabatic invariants, orbit theory, plasma oscillations, hydromagnetic waves in plasmas, pinch effect, dimensionless parameters, applications. {Offered upon demand}

***436. Atmospheric Optics.** (3) Peterson
(Also offered as Astr 436.) Transmission, absorption, and scattering in clear air. Color phenomena of celestial objects, Aerosols and aureoles. The rainbow, haloes, glory, and cloud coronae. {Offered upon demand}

***437. Introduction to Space Physics.** (3) Ahluwalia, Leavitt, Peterson
(Also offered as Astr 437.) Solar activity and the solar wind, interplanetary particles, solar-terrestrial effects, the earth's magnetosphere and radiation belts, lunar and planetary measurements, cosmic radiation in space. {Offered upon demand}

***440. Atmospheric Physics.** (3) Dean
Atmospheric gases; cloud physics; the high atmosphere; radiation, atmospheric motions, and turbulence; aerosols. {Offered upon demand}

***445. Cosmic Radiation.** (3) Ahluwalia, Swinson
(Also offered as Astr 445.) Primary cosmic radiation, the production and detection of secondary radiation, 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, Dean, Finley, Thomas
(Also offered as Math 466.) A selection of mathematical methods applied to physics. {Spring}

*491-492. **Contemporary Physics.** (3, 3) Ahluwalia, Bryant, Dean, Dieterle, Finley, Green, Leavitt, Regener, Swinson
Introduction to special relativity and quantum mechanics; atomic and nuclear physics, cosmic rays. {491—Fall, 492—Spring}

*493L-494L. **Contemporary Physics Laboratory.** (2, 2) Bryant, Swinson, Wolfe
Spectrographic methods; lasers; atomic structure; natural and artificial radioactivity; cosmic rays. 6 hrs. lab. {Offered upon demand}

*495. **Theory of Special Relativity.** (3) Ahluwalia, Finley
Relativistic kinematics and dynamics, relativistic electromagnetism, application to nuclear physics and astrophysics. {Offered upon demand}

496-497. **Contemporary Physics Honors.** (3, 3) Ahluwalia, Bryant, Dean, Dieterle, Finley, Green, Leavitt, Regener, Swinson
{496—Fall, 497—Spring}

498L-499L. **Contemporary Physics Honors Laboratory.** (2, 2) Bryant, Swinson, Wolfe
{Offered upon demand}

*500-501. **Advanced Seminar.** (1-3, 1-3)
{Fall, Spring}

*503. **Classical Mechanics I.** (3) Beckel, Chandler, Finley, Green, Thomas
{Fall 1978 and alternate years}

*504. **Classical Mechanics II.** (3) Chandler, Finley, Thomas
{Spring 1979 and alternate years}

*505. **Statistical Mechanics and Thermodynamics.** (3) Chandler, Thomas
{Spring 1979 and alternate years}

*511. **Electrodynamics I.** (3) Alpert, Finley, Green, Thomas
{Fall 1977 and alternate years}

*512. **Electrodynamics II.** (3) Finley, Green, Thomas
{Spring 1978 and alternate years}

*521. **Quantum Mechanics I.** (3) Alpert, Finley, Leavitt, Thomas
{Spring}

*522. **Quantum Mechanics II.** (3) Beckel, Finley, Leavitt, Thomas
{Fall}

*523. **Quantum Mechanics III.** (3) Finley, Thomas
{Spring 1978 and alternate years}

*524. **Quantum Mechanics IV.** (3) Thomas
{Fall 1978 and alternate years}

*530. **Selected Topics in Solid State Physics.** (3)‡ Dean
Prerequisite: 521. {Offered upon demand}

*531. **Atomic Structure.** (3) Beckel
Prerequisite: 521. {Offered upon demand}

*532. **Molecular Structure.** (3) Beckel
Prerequisite: 531. {Offered upon demand}

*534. **Selected Topics in Biophysics.** (3)‡ Howarth
{Offered upon demand}

*537. **Selected Topics in Space Physics.** (3)‡ Ahluwalia, Leavitt
(Also offered as Astr 537.) {Offered upon demand}

*539. **Selected Topics in Optics and Laser Physics.** [Selected Topics in Laser Physics] (3)‡ Alpert
Prerequisites: 302 and 521. {Offered upon demand}

*540. **Introduction to Nuclear Physics.** (3) Dieterle, Leavitt
{Offered upon demand}

*542. **Selected Topics in Theoretical Nuclear Physics.** (3)‡ Chandler, Finley
Prerequisites: 521, 540. {Offered upon demand}

*543. **Selected Topics in High-Energy Physics.** (3)‡ Chandler, Dieterle, Finley, Leavitt
Prerequisite: 521. {Offered upon demand}

*547. **Selected Topics in High-Energy Astrophysics.** (3)‡ Ahluwalia, Finley, King
(Also offered as Astr 547.) {Offered upon demand}

*551-552. **Problems.** (1-4 hrs. each semester)

*566. **Advanced Methods of Theoretical Physics.** (3)‡ Beckel, Finley, Thomas
{Offered upon demand}

*570. **Theory of Relativity.** (3) Finley
Prerequisite: 503. {Offered upon demand}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

*650. **Research.** (6-12)

*699. **Dissertation.** (1-9 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

ASTRONOMY

101. **Introduction to Astronomy.** (3)
An elementary course, primarily for non-science majors. {Fall, Spring}

111L. **Astronomy Laboratory.** (1) 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}

*311-312. **Research Methods.** (1, 1) King, Peterson, Zeilik

370. **The Solar System. (3) King, Peterson
The sun, planets, satellites, comets; the interplanetary medium. Prerequisites: 270-271. {Fall}

371. **Stars and Galaxies. (3) King, Peterson
The structure and evolution of stars, their distribution in space, gaseous nebulae and the interstellar medium, galaxies and cosmology. Prerequisites: 270-271. {Spring}

*421. **Introduction to Astrophysics.** (3) King, Zeilik
Observed and inferred properties of stars, using fundamental concepts of atomic and nuclear physics, with a goal of understanding the physical structure and evolution of stars.

*423. **Solar Physics.** (3) Hyder
The sun as a star, photosphere, chromosphere, corona, solar activity, solar emission of matter and radiation, experimental techniques. {Offered upon demand}

*425. **Galactic Nebulae and Interstellar Matter.** (3) Peterson
Formation and evolution of gaseous nebulae, excitation mechanisms, elemental abundances, absorption, scattering and polarization by interstellar grains and gases. Star formation. Prerequisite: 421. {Offered upon demand}

*436. **Atmospheric Optics.** (3) Peterson
(Also offered as Physcs 436.) Transmission, absorption, and scattering in clear air. Color phenomena of celestial objects. Aerosols and aureoles. The rainbow, haloes, glory, and cloud coronae. {Offered upon demand}

*437. **Introduction to Space Physics.** (3) Ahluwalia, Leavitt, Peterson
(Also offered as Physcs 437.) Solar activity and the solar wind, interplanetary particles, solar-terrestrial effects, the earth's magnetosphere and radiation belts, lunar and planetary measurements, cosmic radiation in space. {Offered upon demand}

*445. **Cosmic Radiation.** (3) Ahluwalia, Swinson
(Also offered as Physcs 445.) Primary cosmic radiation, the production and detection of secondary radiation, 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 Space Physics.** (3)‡ Ahluwalia, Leavitt
(Also offered as Physcs 537.) {Offered upon demand}

*547. **Selected Topics in High-Energy Astrophysics.** (3)‡ Ahluwalia, Finley, King
(Also offered as Physcs 547.) {Offered upon demand}

POLITICAL SCIENCE

PROFESSORS R. J. Sickels, Ph.D. (Chairperson); F. R. Harris, J.D.; F. Heady, Ph.D.; E. C. Hoyt, Ph.D.;[2] M. C. Needler, Ph.D.; A. H. Rosenthal, Ph.D.; J. B. Sorenson, Ph.D.; H. P. Stumpf, Ph.D.; ASSOCIATE PROFESSORS F. C. Garcia, Ph.D.; P. L. Hain, Ph.D.; P. A. Lupsha, Ph.D.; H. V. Rhodes, Ph.D.; ASSISTANT PROFESSORS T. L. Hurley, Ph.D.; J. L. Ray, Ph.D.; A. B. Reed, Ph.D.; K. L. Remmer, Ph.D.; I. Robinson, Ph.D.; R. A. Seward, M.A.; and new appointment to be made.

MAJOR STUDY

A total of 33 hours is required for a major in political science. A major must include 280 and 9 hours of the core courses (200, 220 or 221 [not both], 240, and 260). No more than 12 hours of 100- and 200-level courses, in addition to 280, may be counted toward a major. The remainder of the 33 hours requirement must come from courses numbered 300 or above.

MINOR STUDY

A total of 21 hours, including at least three of the 200-level 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.

INTRODUCTORY COURSE FOR FRESHMEN

110. [100] **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}

CORE LOWER-DIVISION 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)**
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)**
Political systems of Western European countries. {Fall, Spring}

240. International Politics. **(3)**
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}

250. Latin America Through Film. **(3)**
(Also offered as Soc and Lat Am St 250.) Interdisciplinary introduction to Latin American studies through documentary films, lectures, reading, and discussion.

260. Political Ideas. **(3)**
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}

280. Introduction to Political Analysis. **(3)**
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}

UPPER-DIVISION COURSES

***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}

***301. Urban Politics and Policy.** **(3)** Lupsha
Introduction to urban politics and policy, including survey of governmental forms, political processes, and the interaction of urban institutions and policies. Prerequisite: 200. {Fall}

***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. The Government of New Mexico.** **(3)** Lupsha, Hain
Prerequisite: 200.

***305. Public Opinion and Electoral Behavior.** [Public Opinion] **(3)** Hurley
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
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}

***311. The Legislative Process.** **(3)** Hain
The recruitment, formal and informal procedure, and power structure of legislative bodies; their place in contemporary American government. Prerequisite: 200. {Spring}

***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. {Spring}

***322. Authoritarian Political Systems.** **(3)**
Survey and analysis of twentieth-century authoritarian regimes, including facist, communist, and military political orders.

***342. American Foreign Policy.** **(3)** Hoyt, Sorenson
Prerequisite: 240. {Fall, Spring}

***350. Public Finance.** **(3)**
(Also offered as Econ 350.) Taxation, government borrowing, financial administration, and public expenditures. Prerequisite: Econ 201.

***351. Comparative Politics: Developing Countries.** **(3)** Remmer
Prerequisite: 220. {Fall}

352. African Politics. **(3)**
(Also offered as Ed Fdn 352.) This course examines political development of the new African states, the impact of colonial rule and the problems of building new nation-states. {Spring}

***355. 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. 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 I.** **(3)** Sorenson
A study of the evolution of the Soviet political system with emphasis on dynamics and institutional structure. Prerequisite: 220. {Fall}

***361. Classical Political Theory.** **(3)** Rhodes
Prerequisite: 200 or 260 recommended. {Fall}

***362. Modern Political Theory.** **(3)** Rhodes
Prerequisite: 200 or 260 recommended. {Spring}

***363. Latin American Political Theory.** **(3)**
The development of political philosophy in Latin America with emphasis on contemporary thinkers. Knowledge of modern Latin American history is recommended. {Offered upon demand}

368. American Political Thought. **(3)** Rhodes
Recommended preparation: 200. {Offered upon demand}

***375. Constitutional Law: Powers.** [Law and Politics I] **(3)** Stumpf
The separation of powers and federalism. Includes an introduction to the Supreme Court as an institution. Prerequisite: 200. {Fall}

***376.** [475] **Constitutional Law: Rights.** [Law and Politics II] **(3)** Stumpf
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.

*380. **Political Socialization.** [Political Learning and Political Culture] (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}

*381. **Psychology and Politics.** (3) Lupsha
Examines the relationship of psychological theory and experiments to understanding politics and political behavior. Motivation, frustration-aggression, personality, learning and development, and stimulus-response theories will be analyzed in relation to politics, political personality, and political behavior. {Spring}

*382. **Group Politics.** (3) Garcia, 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. {Fall}

*410. **Public Policy Analysis.** (3)
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}

*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

420. **Undergraduate Seminar.** [Seminar in Comparative Politics] (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.

*421. **Introduction to Public Management.** (3)
(Also offered as Pub Ad 421.) The organization, administration, and operation of federal, state, and local agencies with emphasis on the dynamics and problems involved in carrying out public policy.

*430. **Political Violence.** (3) Lupsha
Examines political violence cross-culturally and cross- temporally. Emphasis is placed on theories, models, and explanation of the phenomenon. {Spring}

*440. **International Conflict, Arms Control, and Disarmament.** (3) Sorenson
Systematic examination of political, technological, strategic, and economic dimensions of arms control and disarmament in a nuclear missile era. Prerequisites: 200 and 240.

*442. **International Politics II.** (3)
Selected contemporary problems of international politics. Prerequisite: 240.

*443. **International Law and Organization.** (3) Hoyt
Prerequisite: 240. {Spring}

*445. **Inter-American Relations.** (3) Ray
Survey of contemporary international politics in Western Hemisphere. Emphasis on conflict resolution of trade and economic assistance problems, territorial disputes, ideological issues, and integration. {Spring}

*450. **Government and Politics of Communist China.** (3) Sorenson
Examination of problems, policies, postures, and options of Communist China. {Spring}

*455. **Major Powers of Latin America.** (3) Needler
Politics of Argentina, Brazil, and Mexico (in some years a fourth country may be added). Recommended preparation: 355 or 356. {Spring}

*459. **Soviet Foreign Policies.** (3) Sorenson
A survey and analysis of goals and methods of Soviet foreign policies toward the West, the uncommitted countries, Communist China, and Eastern Europe. Prerequisite: 220 or 357. {Spring}

*465. **City Planning Methods.** (3)
(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 multidiscipline introduction to urban studies, with emphasis on planning and control. {Fall}

*469. **Topics in Comparative Politics.** (3)‡
Topics will be noted in appropriate class schedules. {Offered upon demand}

*470. **Environmental Politics.** (3) Hoyt, Seward
A study of political problems of environmental protection and land use planning. Research paper required.

*478. **Seminar in International Studies.** (3) Slavin
(Also offered as Econ, Geog, M&CL, 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.**

*480. **Intermediate Statistics for Social Research.** (3) Hurley
(Also offered as Soc 480.) 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) Hurley
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 to undergraduate majors.)

499. **Independent Study.** (1-3)
Open to senior majors with 3.3 GPA and permission of department.

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) Arms, Tedlock, G. W. Smith
(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 hrs. each semester)

*555. **Interdisciplinary Seminar: Asia.** (3)
(Also offered as Geog, Hist 555.)

*584. **Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler, Schwerin
(Also offered as Anth, Econ, Hist, Soc 584.) {Spring}

*585. **The Teaching of Political Science.** (3)
Prerequisite: graduate standing. {Fall}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the Graduate School Bulletin for total credit requirements.

***699. Dissertation. (1-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

PORTUGUESE

See Modern and Classical Languages.

PSYCHOLOGY

PROFESSORS H. Ellis, Ph.D. (Chairperson); D. Benedetti, Ph.D.; D. Ferraro, Ph.D.; G. Grice, Ph.D.; P. Johnson, Ph.D.; K. Koenig, Ph.D.; F. Logan, Ph.D.; R. Norman, Ph.D.; J. Rhodes, Ph.D.; S. Rosenblum, Ph.D.; B. Ruebush, Ph.D.; ASSOCIATE PROFESSORS D. Feeney, Ph.D.; T. Friden, Ph.D.; J. Gluck, Ph.D.; R. Harris, Ph.D.; S. Roll, Ph.D.; ASSISTANT PROFESSORS T. Blake, Ph.D.; C. Conrad, Ph.D.; H. Delaney, Ph.D.; T. Goetz, Ph.D.; F. Harnick, Ph.D.; G. Hodge, Ph.D.; N. Katz, Ph.D.; W. Miller, Ph.D.; E. Padilla, Ph.D.; J. Parsons, Ph.D.

AFFILIATED FACULTY: PROFESSOR L. Libo, Ph.D.; ASSOCIATE PROFESSOR M. Harris, Ph.D.; ADJUNCT ASSOCIATE PROFESSORS A. Bruner, Ph.D.; B. Porch, Ph.D.; J. Schenkel, Ph.D.; ASSISTANT PROFESSORS J. Cardillo, Ph.D.; P. Day, D.V.M.; R. Duncan, Ph.D.; D. Flammer, Ph.D.; R. Silleroy, Ph.D.; S. Snyder, D.V.M.; L. Wynne, Ph.D.; ADJUNCT ASSISTANT PROFESSOR K. Haaland.

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 psychology; 4—comparative/physiological psychology; 5—special topics in psychology; 6—psychology of learning, motivation, and perception; 7—social/personality 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 the 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. 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.

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.

101. General Psychology I. (3) Blake, Ferraro, Gluck, Hodge, Parsons
An introduction to the areas of learning, motivation and comparative-physiological psychology. {Fall, Spring}

102. General Psychology II. (3) Miller, Katz, Harnick, Roll
An introduction to the areas of human development, perception, language, thinking, intelligence, personality, and social psychology. {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) Norman
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 Tehniques. (3) Blake
Application of the concepts covered in 201. Includes discussion of basic principles of research design and scientific methodology as applied to psychology. Corequisite: 201. {Summer, Fall, Spring}

210. Educational Psychology. (3) Delaney, Harnick, Parsons, Rosenblum
An overview of 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) Norman
Topics in applications to everyday life, such as personnel selection, consumer psychology, and environmental problems. Prerequisite: 101 and 102. {Spring}

230. Psychology of Adjustment. (3) Benedetti, Rhodes
An introduction to concepts of psychological health, mental illness, adjustment problems, and adjustive processes. Prerequisite: 102. {Summer, 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. {Fall}

260. Psychology of Learning. (3) Conrad, 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. {Spring 1977 and alternate years}

271. Psychology of Sexual Identity. (3) Staff
Exploration of the ways in which sexual identity influences or fails to influence intellectual, emotional, and social behavior. {Fall}

***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}

***320. Developmental Psychology. (3)** Harnick, 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}

***321. Introduction to Child Research. (3)** Parsons
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 320. {Fall}

***322L. Child Research Laboratory. (2)** Parsons
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)** Katz, Miller
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}

***332. Abnormal Behavior. (3)** Katz, Miller
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: 331. {Spring}

***340. Physiological Psychology. (3)** Feeney, Hodge
Students attend the lectures of Psych 240 and meet for additional advanced discussion. Class is limited to 10 students who must have permission of the instructor. **Credit cannot be received for both 240 and 340.** {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
Methods, principles, and theories of classical, instrumental, and operant conditioning. Prerequisite: 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)** Conrad
(Also offered as Ling 367.) Survey of broad range of topics in psycholinguistics, with special emphasis on language acquisition; speech perception; memories for linguistic material, language, and reasoning. Prerequisites: 101 or 102 and 260. {Fall}

***368. Sensation. (3)** Friden
Exploration of sense organ operation with emphasis on both behavioral and physiological data. Prerequisite: 260. {Fall 1977 and alternate years}

***371. Social Psychology. (3)** Harris
Introduction to the behavior of organisms (primarily humans) as affected by the mutual interdependence among organisms. Emphasis is on mathematically stated hypotheses about social interaction, including judgment of oneself and others, attitude change, leadership and conformity. Prerequisite: 230 or 260. {Fall}

***372L. Social Psychology Laboratory. (2)** Harris
Laboratory projects relevant to topics in 371. Prerequisite: 200 or 201; corequisite: 371. 4 hrs. lab. {Fall}

***373. Cross-cultural Psychology. (3)** Staff
An examination of 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) Gluck, Johnson
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) Gluck, Johnson
Continuation of 391. {Spring}

***400. History of Psychology. (3)** Benedetti
An introduction to the major developments and systems in the history of psychology, partly in the context of theoretical and methodological problems of contemporary psychology. Prerequisite: 101 or 102. {Spring}

***401. Mathematical Psychology. (3)** Delaney, Harris
Survey of mathematical descriptions of behavior. Prerequisite: 200 or 201. {Fall}

***402. Multivariate Statistics. (3)** Friden, Harris
(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}

***410. Psychological Testing. (3)** Norman
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}

***412. Advanced Educational Psychology. (3)** Delaney, Rosenblum
Discussion of the potential 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}

***413. Industrial and Organizational Psychology.** [Industrial Psychology] **(3)** Blake
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: 102. {Spring 1977 and alternate years}

***414. Human Factors Psychology.** [Engineering Psychology] **(3)** Blake
Application of psychological principles to the design and evaluation of man-environment systems. Prerequisite: 102. {Spring}

***415. Environmental Psychology. (3)** Blake
A summary of existing knowledge about the impact of environments on human behavior drawn from psychology, anthropology, architecture, and urban studies is presented. Applications of behavioral data to the design of environmental systems are discussed. 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. {Summer only}

***420. Advanced Developmental Psychology. (3)** Harnick
Investigation of the theoretical bases and critical issues in the area of developmental psychology.

***428. Cognitive Development. (3)** Johnson
Research and theory concerning the development of conceptual, intellectual and linguistic behavior in children. Prerequisites: 101, 102, and 320. {Spring}

***431. Psychology of Intellectual Exceptionality. (3)** Rosenblum
Theory and research dealing with various aspects of mental retardation, giftedness, and creativity in children and youth. Prerequisite: 320.

***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: 320. {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}

***441. Brain Mechanisms of Information Processing and Storage. (3)** Staff
An advanced course in basic electrical and chemical processes of the brain and their relation to information input, coding storage, and output. Prerequisite: 240 or 340. {Spring}

***442L. Advanced Physiological Psychology Laboratory. (2)** Staff
Laboratory projects related to topics in 441. Prerequisite: 200 or 201; corequisite: 441. 4 hrs. lab. {Spring}

*444. **Introduction to Clinical Neuropsychology.** (3) Rhodes
Application of psychophysiological techniques and principles to clinical problems. Prerequisites: 240 or 340 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}

*446L. **Comparative Psychology Laboratory.** (2) Gluck
Laboratory projects related to topics in 445. Prerequisite: 200 or 201; corequisite: 445. 4 hrs. lab. {Fall}

*447. **Psychochemistry.** (3) Staff
Basic chemical principles of neuronal conduction and synaptic transmission. Biochemical bases of memory consolidation and affective disorders. Prerequisites: 102 and permission of instructor. {Fall}

*448. **Primate Behavior.** (3) Gluck
In-depth survey of 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}

*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}

*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}

*461. **Motivation of Behavior.** (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 or 340. {Spring}

*462L. **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.** [Cognitive Processes] (3) Conrad, Johnson
This course involves the study of skilled mental and physical performance and the psychological processes and structures underlying these activities. Language comprehension, skilled reading, and fine perceputal-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}

*464L. **Human Performance Lab.** [Cognitive Processes Laboratory] (2) Conrad, Johnson
Laboratory projects related to topics in 463. Prerequisite: 200 or 201; corequisite: 463. 4 hrs. lab. {Fall}

*467. **Thinking and Reasoning.** [Advanced Psycholinguistics] (3) Conrad, Johnson
The course will focus on an 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 a 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}

*468L. **Thinking and Reasoning Lab.** [Advanced Psycholinguistics Laboratory] (2) Conrad, Johnson
Laboratory projects related to topics in 467. Prerequisite: 200 or 201; corequisite: 467. {Spring}

491. **Senior Honors Seminar.** (3) Logan
Experimental methods and laboratory techniques. Senior thesis based on independent research. Prerequisite: 392. {Fall}

492. **Senior Honors Seminar.** (3) Ellis, Logan
Continuation of 491. Prerequisite: 491. {Spring}

499. **Undergraduate Problems. (1-3 hrs. each semester, maximum 6)**
Prerequisite: permission of instructor.

*501. **Advanced Statistics.** (3) Friden

*502. **Design of Experiments.** (3) Ellis

*503. **Seminar in Teaching.** (3) Benedetti

*505. **Research Techniques in Experimental Psychology.** (2) Ferraro

*512. **Theory in Educational Psychology.** (3) Logan

*521. **Research Methods in Child Development.** (3) Parsons

*523. **Seminar in Social Development of the Child.** (3) Parsons, Rosenblum

*524. **Seminar in Functional Analysis of Child Development.** (3) Parsons

*525. **Seminar on Piaget.** (3) Staff

*528. **Seminar in Cognitive Development.** (3) Johnson

*531. **Introduction to Clinical Psychology.** [Seminar in Clinical Psychology] (3) Rosenblum

*532. **Seminar in Behavior Pathology.** (3) Staff

*533. **Psychological Evaluation: Cognitive Functions.** (3) Norman

*534L. **Assessment of Cognitive Functions Laboratory.** (2) Roll

*535. **Psychological Evaluation: Personality Functions.** (3) Roll

*536L. **Assessment of Personality Functions Laboratory.** (2) 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 Psychochemistry.** (3) Staff

*551. **Graduate Problems.** (1-3)††

*560. **Seminar in Child Language.** (3) Conrad

*561. **Theories of Learning.** (3) Ferraro, Logan

*562. **Human Learning and Cognition.** (3) Ellis, Johnson

*563. **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 Semantics.** (3)‡ Conrad
(Also offered as Ling 569.)

*571. **Advanced Social Psychology.** (3) Harris

*572. **Theories of Personality.** (3) Norman

*573. **Seminar on Cross-cultural Research in Cognitive Development, Learning, Thinking, and Perception.** (3) Staff

*599. **Master's Thesis. (1-6 hrs. per semester)**

*600. **Clinical Practicum.** (1-3) Staff
Prerequisite: permission of instructor.

*601. **Methods of Behavioral Research.** (3) Grice

*630. **Seminar in Psychoanalytic Psychotherapy.** (3) Roll

*631. **Psychotherapy with Adults I.** [Experimental Psychotherapy I] (3) Staff

*632. **Psychotherapy with Adults II.** [Experimental Psychotherapy II] (3) Staff

*633. **Case Formulation Seminar.** [Case Conference Seminar] (3)‡ Roll

*634. **Seminar in Treatment of Children, Adolescents and Families.** [Seminar in Treatment of Disturbed Children and Adolescents] (3) Ruebush

*641. **Seminar in Physiological Psychology.** (3)‡ Feeney, Rhodes

*650. **Special Topics in Psychology.** (1-3) Staff

*661. **Seminar in Discrimination Learning.** (3) Logan

*664. **Stimulus Control in Operant Conditioning.** (3)†† Ferraro

*666. **Seminar in Perceptual Learning.** (3) Ellis

*699. **Dissertation. (1-9 hrs. per semester)**

PUBLIC ADMINISTRATION

PROFESSORS L. Stitelman, Ph.D. (Director); G. L. Boyle, Ph.D.; F. Heady, Ph.D.; A. H. Rosenthal, Ph.D.; D. W. Smithburg, Ph.D.; ASSISTANT PROFESSORS T. D. Edgmon, Ph.D.; A. Reed, Ph.D.; LECTURERS V. Berniklau, M.A.P.A.; James Bickle, M.A.P.A.; Edward Fuge, M.A.P.A.; R. Hein, B.A.; Zane Hopper, M.B.A.; F. Keinhenz, M.A.; John O'Leary, B.A.; M. A. Shaening, Ph.D.; Diana Smith, M.A.

For a description of the curriculum leading to the degree Masters of Arts in Public Administration, see the Graduate School Bulletin.

*421. **Introduction to Public Management.** (3)
(Also offered as Pol Sci 421.) The organization, administration, and operation of federal, state, and local agencies with emphasis on the dynamics and problems involved in carrying out public policy.

*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. [*423] Urban Public Management. (3)**

***524. [*424] Intergovernmental Administrative Problems. [Intergovernmental Administrative Relations] (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. State and Local Administration. (3)**

***545. [*445] 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. [*429] Workshop for Interns. (1-3 hrs. per semester, maximum of 6)**
Prerequisite: permission of instructor.

***560. Public Policy and Aging. (3)**

***575. Seminar on Energy Administration. (3)**
(Also offered as Econ 343.)

***590. Division Seminar. (3)**

***595. Public Science Policy and Administration. (3)**
Prerequisite: permission of Director and instructor.

***596. Seminar: Public Science Policy and Administration. (3)**
Continuation of 595. Prerequisite: permission of Director and instructor.

***597. Research Methodology. (3)**
Prerequisite: 500.

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

RELIGIOUS STUDIES

RELIGIOUS STUDIES MINOR

A minor in religious studies is administered by the Philosophy Department. Students interested in this program should consult Professor Matthieu Casalis, who is the adviser for students in the program. The purpose of this minor is to encourage an interdisciplinary approach to religious phenomena (philosophical, historical, sociological, linguistic, etc.). Students shall complete 18 hours, 9 of which must be in philosophy and 9 hours distributed among three other departments. Courses that will satisfy the minor are: Phil 231, 232, 263, 264, 304, 334, 336, 365, 441 (when topic is appropriate), 442 (when topic is appropriate); Art Hi 270, 440-441; Engl 341; Hist 311, 325 326, 337; Greek 101-102; Music 476; Soc 422.

(Chinese, Sanskrit, and Hebrew will also satisfy when they are available at UNM.) Additional courses may be considered, provided they have a clear bearing upon the study of religion.

RUSSIAN

See Modern and Classical Languages.

RUSSIAN STUDIES

COMMITTEE IN CHARGE: ASSOCIATE PROFESSOR R. Robbins, Ph.D. (History), Chairperson; PROFESSORS P. Chung, Ph.D. (Economics); R. Murphy, Ph.D. (Geography); J. Sorenson, Ph.D. (Political Science); ASSISTANT PROFESSOR B. Lindsey, Ph.D. (Modern Languages).

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

FOREIGN LANGUAGE, 18 hours
Russian 101, 102, 201, 202, 301, 302

ECONOMICS, GEOGRAPHY, AND POLITICAL SCIENCE, 18 hours
Econ 200, 201, 450 or 455
Geog 333
Pol Sci 357, 459
HISTORY, 9 hours
Hist 102, 348, 349

ADDITIONAL REQUIREMENTS, 18 hours to be selected following consultation with the adviser.

MINOR IN RUSSIAN STUDIES, 21 hours

FOREIGN LANGUAGE
Russian 101, 102, 251, 252

9 ADDITIONAL HOURS CHOSEN FROM:
Econ 450, 455
Geog 333
Pol Sci 357, 459
Hist 303, 348, 349
Russian 301, 302, 303, 338

SOCIOLOGY

PROFESSORS P. David, Ph.D. (Chairperson); T. Abel, Ph.D. (Scholar-in-Residence); M. L. DeFleur, Ph.D.; G. H. Huaco, Ph.D.; R. F. Tomasson, Ph.D.; ASSOCIATE PROFESSORS D. H. Bogart, Ph.D.; F. L. Gehlen, Ph.D.; P. H. McNamara, Ph.D.; H. C. Meier, Ph.D.; G. W. Merkx, Ph.D.; C. E. Woodhouse, Ph.D.; ASSISTANT PROFESSORS L. P. Sutton, Ph.D.; Jill G. McKelvy, Ph.D.; A. W. St. George, Ph.D.; N. P. Valdes, Ph.D.

AFFILIATED FACULTY: PROFESSOR R. W. Buechley, Ph.D.; E. Lieuwen, Ph.D.; M. C. Needler, Ph.D.; ASSOCIATE PROFESSOR D. L. Bachelor, Ph.D.

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., 312 (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

At least 36 hours of course work, including the following courses: 101, 110, 281, 371, 471, and 481L.

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 may be selected from those of the following courses that are offered outside of the student's major department: Soc 213, 216, 230, 312, 313, 325, 414; 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 p. 30 for general requirements for departmental honors.

101. Introduction to Sociology. [Introduction to Micro-Sociology] (3) DeFleur, McNamara, Merkx
Basic concepts, topics, and theories of contemporary sociology. Prerequisite for more advanced courses in sociology.

110. [110L] Introduction to Sociological Inquiry. [Sociological Inquiry Laboratory; Sociological Data Laboratory] (3) Bogart, Meier
Laboratory and field exercises in sociological investigation. Utilization of existing sociological information and data; techniques of empirical investigation. Pre- or corequisite: 101.

200. Foundations of Social Welfare. [Social Foundations of Public Welfare] (3) McKelvy, Tomasson
The structure and functions of social welfare institutions for meeting changing human needs and social conditions. Not applicable to a major in sociology but applicable to a minor in sociology or to a minor in social welfare. Prerequisite: 101. {Fall}

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) McKelvy, Sutton
Theory and research on deviant behavior; types of individual and subcultural deviance. Prerequisite: 101. {Fall, Spring}

215. Social Stratification. (3) Gehlen, Meier
Structure and dynamics of class, status, and power in society; social consequences of stratification. Prerequisite: 101.

216. Race and Cultural Relations. (3) McNamara
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.

226. Sociology of the Barrio. (3)
Historical development of the Mexican-American urban barrio; its class structure and social conditions in relation to major sociocultural institutions of U.S. society. Not applicable to a major or minor in sociology.

230. Society and Personality. (3) Bogart, McNamara
Social psychological processes involved in the development of personality characteristics and problems; problems of individual and group identity. Prerequisite: 101.

250. Latin America Through Film. (3) Merkx, Remmer
(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}

251. Environment and Man. (3)
Functioning of natural ecosystems as applied to human populations; energy flows, biogeochemical cycles, the ecology of population growth and succession. Prerequisite: 101.

280. Introduction to Probability and Statistics. (3)
(Also offered as Math 102.) Recommended preparation for 481L. Introduction to basic principles of statistical treatment of numerical data; basic ideas of probability, sampling, and statistical inference. Prerequisite: knowledge of algebra. {Fall, Spring}

281. Sociological Data Analysis. [Elementary Sociological Applications of Statistics] (3) Meier
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. Principles of Social Work. (3) McKelvy
Organization and practice of social work in community welfare agencies; social work as a career. Not applicable to a major in sociology but applicable to a minor in sociology or to a minor in social welfare. Pre- or corequisite: 200.

301. Methods of Social Work Intervention. [Principles of Social Casework] (3) McKelvy
Theories and techniques utilized in social work practice. Role of the social worker in problem-solving situations. Not applicable to a major in sociology but applicable to a minor in sociology or to a minor in social welfare. Pre- or corequisite: 300.

303. Sociology of Political Behavior. (3) Gehlen
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.

***312. Juvenile Delinquency.** (3) Sutton
The causes and nature of juvenile delinquency; its prediction, prevention, and control. Prerequisite: 101; recommended additional preparation: 213.

***313. Criminology.** (3) David, Sutton
The sociological dimensions of crime, types of criminal behavior, explanations of crime. Prerequisites: 101 and 110; recommended: 213. {Fall, Spring}

316. Black Family in America. (3)
Changes in the structure of the Black family from its historical roots in Africa through slavery and reconstruction up to the contemporary setting in the U.S. Effects of social and economic conditions on Black family life. Prerequisite: 101.

***321. Sociology of Medical Practice.** (3)
Medical care settings with special attention to professional roles of medical practitioners and the role of the patient. Prerequisite: 101.

325. Social Psychology of Marriage and the Family. (3) St. George
Interpersonal dynamics of marital and family relationships; conflict and solidarity in families; appraisal of research, education, counseling, and the treatment and prevention of family problems. Prerequisite: 101; recommended: 225 or 230.

***331. Collective Behavior.** (3) Gehlen
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) DeFleur
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: 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.

***351. The Urban Community.** (3) McNamara, Gehlen
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) Valdes
The impact of technological change on societal institutions with special attention to underdeveloped societies. Prerequisite: 101.

***365. Urbanization in Latin America.** (3) Valdes
Processes of urbanization in Latin America; comparative studies of the impact of industrialization and rural-urban migration; emphasis on social and cultural changes accompanying rural-urban migration. 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}

381. Nature of Social Inquiry. (3) St. George
Philosophy and methodology of sociological inquiry; basic problems of sociological explanation. Prerequisites: 101 and 110

399. Sociology Honors Seminar. (3)
Restricted to students admitted to departmental honors program. {Offered upon demand}

***413. Criminal Justice.** (3) Sutton
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
The police, courts, prisons, probation and parole; recent developments in the control of crime. Prerequisite: 312 or 313.

*420. **Sociology of Ideology and Literature.** (3) Huaco
Sociological contributions to the study of ideology and theories in the sociology of literature; critical examination of analyses of culture; literary differences in form or subject matter as related to differential social factors.

421. **Sociology of Education.** (3) Bachelor, Gehlen
(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.

425. **Latin American Institutions.** (3) Merkx, Valdes
Studies of selected institutional arrangements in Latin American societies. Prerequisites: 101 and 110.

*430. **Sociology of Knowledge.** (3) Huaco
The social bases of ideology; ideological phenomena as distortions of social reality; isomorphism in social and cultural patterns; social causation of ideology. Prerequisite: 101.

*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.

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. {Fall}

*451. **Population.** [Population Problems] (3) 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 theoretical 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
(Also offered as Pol Sci 480.) 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
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}

*485. **Seminario de Investigación sobre la Sociedad Mejicano-Americana.** (3) Merkx
El analisis de investigaciones empiricas sobre las organización cultura, y ecología de la sociedad mejicano-americana en el suroeste. El curso comprendera tambien la formulación de proyectos de investigación empiricos. Cada estudiante llevara a cabo un trabajo de investigación en el campo. La lengua de instruccion del curso sera español. Se requiere: dominio de español, nueve horas de sociología incluyendo 481L, o permiso del 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. **Seminar: Social Organization.** (3) Meier, Woodhouse

*502. **Seminar: Social Systems Analysis.** (3) Bogart

*503. **Seminar: Political Sociology.** (3) Gehlen, Woodhouse

*504. **Seminar: The Control of Deviance.** (3) David
Prerequisite: 312, 313, or 414.

*505. **Seminar: Theroy of Complex Organizations.** (3) Bogart

*506. **Seminar: Comparing Nations.** (3) Merkx, Tomasson

*507. **Sociological Theory: Selected Topics.** (3) Huaco, Merkx

*508. **Seminar: Comparative Latin American Social Systems.** (3) Merkx
Prerequisite: 425 or permission of instructor.

*510. **Seminar: Social Movements.** (3) Gehlen

*511. **Proseminar in Sociology.** (1) Woodhouse
Required of all sociology graduate students and normally taken in the first semester of graduate work. {Fall}

*512. **Seminar in the Sociology of Literature.** (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. **Seminar: Criminology and the Sociology of Law.** (3) David
Prerequisite: 312, 313, 413, or 414.

*521. **Seminar: Sociology of Education.** (3) Bachelor, Gehlen
(Also offered as Ed Fdn 581.)

*525. **Pro-Seminar 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}

*531. **Sociology Teaching Practicum.** (1) Bogart
For teaching assistants only. {Fall, Spring}

*535. **Seminar: Social Psychology and Social Structure.** (3) DeFleur

*551-552. **Problems.** (2-3 hrs. each semester)
Tutorial arrangment with member of the graduate faculty. {Fall, Spring}

*580. **Methods of Social Research I.** (3) St. George
Prerequisite: 481L or equivalent. {Spring}

*581. **Methods of Social Research II.** (3) St. George
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, Schwerin
(Also offered as Anth, Econ, Hist, and Pol Sci 584.)

*590. **Research Practicum.** (1-4) St. George
{Fall, Spring}

*599. **Master's Thesis.** (1-6 hrs. per semester)
See Graduate School Bulletin for total credit requirements. {Fall, Spring}

SPEECH COMMUNICATION

PROFESSOR R. Wayne Pace, Ph.D. (Chairperson); ASSOCIATE PROFESSORS J. M. Civikly, Ph.D.; T. G. Plax, Ph.D.; L. B. Rosenfeld, Ph.D.; E. M. Zannes, Ph.D.; ASSISTANT PROFESSORS D. E. DeStephen, Ph.D.; P. C. Feingold, Ph.D.; F. A. Gerace, M.R.E.; R. J. Jensen, Ph.D.

MAJOR STUDY

36 credits in departmental courses, including 101 or 102; 21 credits must be upper-division courses. Advising sequences for courses of study

leading to careers in teaching; interpersonal communication and the helping professions; law, government, and public affairs; organizational communication and management; public relations and public information; and telemediated communication and broadcasting are available from the Department. The Department recommends that students take a course from each of the following areas: interpersonal, organizational, rhetorical, and telemediated communication.

Courses in complementary departments are advised; consult the Chairperson of Speech Communication for details.

Majors should minor in other departments of the College of Arts and Sciences or departments of other colleges in the University, such as Fine Arts, Business and Administrative Sciences, or Education. A distributed minor is available; consult the departmental chairperson. For advice on specific course patterns, consult the Chairperson of Speech Communication.

MINOR STUDY

18 credits in departmental courses, including 101 **or** 102; 12 credits must be upper division.

DEPARTMENTAL HONORS PROGRAM

Guidelines for completing an honors sequence to graduate with departmental honors are available from the Department.

101. Introduction to Speech Communication. (3)
A scientific approach to the principles and concepts of communicative behavior. A nonperformance course. {Fall, Spring}

102. Introduction to Speech Communication. (3)
An analytical approach to the principles and concepts of communication. A nonperformance course. {Fall, Spring}

130L. [255] **Public Speaking.** [Public Discourse] **(3)**
Principles of rhetorical theory applied in public speaking situations; speeches are given. 1 lecture, 2 hrs. lab. {Summer, Fall, Spring}

132. [250] **Parliamentary Procedure. (1)**
Study and practice of the rules governing the proceedings of groups and deliberating assemblies.

221. [201] **Interpersonal Communication. (3)**
Interaction with others through symbols and nonverbal messages; designed to develop competencies in interpersonal relations. {Summer, Fall, Spring}

225. [277] **Problem Solving Groups.** [Problem Solving, Creativity, and Communication] **(3)**
Analysis and application of creative and communicative abilities to solving problems in groups. {Fall, Spring}

232. [305, 330] **Advanced Public Speaking. (3)**
Analysis, preparation, and presentation of specialized forms of public speeches. Prerequisite: 130 or permission of instructor. {Fall, Spring}

240. [212] **Communication in Organizations. (3)**
Review of current literature concerning the relationships among interpersonal communication, organizational behavior, organizational communication networks, and human resources. {Fall, Spring}

252. [292] **Introduction to Linguistic Analysis. (3)**
(See Ling 292.)

260. Oral Interpretation. (3)
Analysis and presentation of written materials.

261. [251] **Telecommunication. (3)**
Survey of theoretical approaches to the processes and effects of the telecommunication media. History, ethics, regulation, and evaluation. {Fall}

265L. Telecommunication Production. (3)
Survey of the various approaches to media production. Contributions of radio, television, motion picture and still photography, theatre, and multimedia concepts to contemporary media production. 2 lectures, 2 hrs. video lab. {Summer, Fall, Spring}

270L. [256] **Communication for Teachers. (3)**
Theory and practice of communication principles and strategies adapted to the special needs of classroom teachers. 1 lecture, 2 hrs. lab. {Fall, Spring}

275. [200] **Forensics. (1 per semester, to a maximum of 4)**
Participation in intercollegiate, campus, and community activities. **Offered on CR/NC basis only.** {Fall, Spring}

280. Scientific Bases of Speech. (3)
(Also offered as Com Dis 280.) The basis of the speech process as presented in the scientific materials of such related fields as physics, physiology, psychology, and linguistics. {Fall, Spring}

303. English Phonetics. (3)
(Also offered as Com Dis and Ling 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}

323. [320] **Nonverbal Communication. (3)**
Body motion, paralanguage, proxemic, and other nonlanguage codes and modes of communication. {Fall, Spring}

325. [240, 223] **Intercultural Communication. (3)**
Problems and practices of communication across cultural and national boundaries, but especially Chicano-Anglo, Black-White, Native American-Anglo relationships.

327. [498] **Persuasive Communication.** [Persuasion] **(3)**
Application of principles of attitude change in practical persuasion. {Spring}

329. [215, 227] **Problems of Interpersonal Communication. (3)**
Analysis of communication difficulties in dyadic and small group relationships.

331. [278, 230] **Argumentation. (3)**
Examines historical and contemporary theories of argumentation. Emphasis placed on development of effective advocacy and criticism of arguments. {Fall, Spring}

332. Southwest Rhetoric. (3)
A study of the aims and strategies of rhetoric produced by and about the Southwest.

334. [307] **Campaigns and Movements.** [Rhetorical Strategies in Movements and Campaigns] **(3)**
Study of rhetorical tactics used by speakers and groups in political campaigns and social movements. {Fall}

336. [306] **Rhetoric of Dissent.** [Revolutionary Rhetoric], [Rhetoric of Dissent, Agitation and Revolution] **(3)**
Discourse of the agitator, demagogue, protestor, and representatives of the establishment; analysis of rhetoric on controversial issues. {Fall}

338. [347] **Rhetorical Criticism. (3)**
Nature, forms, and functions of rhetorical criticism. {Spring}

348. [312] **Communication Audit. (3)**
Philosophy, methods, and designs for studying the communication system of and practices in a complex organization. {Fall}

350. General Semantics. (3)
Influence of perceptions and language habits on evaluations, decisions, and interpersonal relations. {Spring}

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.

361. [341] **Telecommunication Evaluation. (3)**
Methods in analysis of telecommunication media; cross-national evaluation, assessment of social responsibility, criticism of electronic mass media fare and of telecommunication economics and policy. {Spring}

366. Telecommunication Methods. (3)
Video, film, and audio production methods for telecommunication application. Emphasis placed upon formulation of criteria for evaluation and experience in group media production activities. Prerequisite: 265. {Fall}

367L. [365] **Telemedia Film Production. (3)**
Film production focusing on forms and formats suitable for presentation on television, including but not limited to commercials, news, and documentary. 2 lectures, 1 hr. lab. Prerequisite: 265. {Spring}

368. [351] **Television Drama Production. (3)**
(See TA 351.)

369. [352] **Advanced Television Drama Production. (3)**
(See TA 352.)

375. [300] **Advanced Forensics. (1 per semester, to a maximum of 4)**
Intensive study and participation in campus, community, and intercollegiate activities. **Offered on CR/NC basis only.** {Fall, Spring}

***421.** [411] **Theories of Communication. (3)**
Critical analysis of contemporary theories, concepts, models, and empirical research relevant to communicative process. {Fall}

***423. Advanced Nonverbal Communication. (3)**
Analysis and evaluation of research on nonverbal communication. Prerequisite: 323 [320]. {Spring}

***425.** [420] **Small Group Communication. (3)**
(Also offered as Ed Fdn 420.) Theory and practice of human in-

teraction in small groups, including role behavior, conflict resolution, nonverbal communication, and phases in group development; special application to the classroom. {Spring}

428. [346] **Communication Research.** [Empirical Research] **(3)** Basic principles, methods, and techniques of conducting empirical research in speech communication. {Fall}

*431. [499] **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. [495] **Famous Speeches.** [Rhetoric on American Issues] **(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. {Spring}

*442. [412] **Strategies of Organizational Communication. (3)** Consulting for planning and implementing a program for improving communication in a complex organization. {Spring}

*444. [415] **Interviewing. (3)** Theory and practice of dyadic communication in informational, employment, and decision-making situations. {Fall}

*449. [414] **Communication Practices in Professions. (3)** Oral reporting, interviewing, and group discussions in business, industry, and professional organizations. {Spring}

*452. [445] **History of the English Language. (3)** (See Engl 445.)

*455. [492] **Introduction to Linguistics. (3)** (See Engl 440.)

*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.

*461. [451] **Telecommunication Strategies. (3)** Group and individual projects to explore strategies in media use; television in political campaigns, mass media and minorities; organizational implications of the telemedia. {Fall}

*464. [*475] **Telemediated Instruction. (3)** Analysis of the values and use of video materials in instructional applications. {Spring}

*465. [*485] **Advanced Telecommunication Methods. (3)** Nonprint media communication emphasizing purposive integration of media. Application of theories of media effectiveness in individual and team projects. {Spring}

*466. **Writing for the Telecommunication Media. (3)** Theory, analysis, and practice in writing for radio, television, and television film. Prerequisite: 265. {Fall}

*470. **Speech Communication in the Secondary Schools. (3)** Course content, instructional objectives, and teaching materials for speech communication as an academic subject. {Spring}

*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. {Fall, Spring}

*472. [490] **Administration of the Forensic Program. (3)** Problems and methods of directing forensics, managing tournaments, and coaching competitive and noncompetitive activities. {Spring}

490. [440] **Undergraduate Problems. (1-3 per semester, to a maximum of 6)** Prerequisite: permission of departmental chairperson. {Summer, Fall, Spring}

492. [413] **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. [543] **Seminar: Interpersonal Communication. (3)** {Fall}

*523. [580] **Seminar: Intercultural Communication. (3)** {Spring}

*527. [529] **Seminar: Persuasion. (3)** {Spring}

*528. [546] **Communication Research Methods.** [Communication Research] **(3)** {Fall}

*531. [541] **Contemporary Rhetoric. (3)** {Fall}

*534. [545] **Seminar: Public Address. (3)** {Spring}

*535. [540] **Seminar: Reasoned Discourse. (3)** {Spring}

*538. [547] **Seminar: Rhetorical Criticism. (3)** {Fall}

*544. **Seminar: Organizational Communication. (3)** {Spring}

*548. **Organizational Communication Analysis. (3)** {Fall}

*550. **Seminar: Language Behavior. (3)** {Spring}

*551-552. **Graduate Problems. (1-3 hrs. per semester).** {Summer, Fall, Spring}

*555. **Seminar: Educational Linguistics. (1-3)** (See Ling 555.)

*561. [520] **Seminar: Telecommunication Processes and Effects. (3)** {Spring}

*564. [524] **Seminar: Telecommunication Policy and Regulation. (3)** {Fall}

*570. **Seminar: Communication Education. (3)** {Spring}

*573. [501] **Teaching the Basic Course. (1)** {Fall}

*599. **Master's Thesis. (1-6 hrs. per semester)** {Summer, Fall, Spring}

THEATRE ARTS

PROFESSORS P. Prouse, Ph.D. (Chairperson); R. Hartung, M.F.A.; W. Martin, M.F.A.; J. Yell, M.F.A.; ASSOCIATE PROFESSORS C. Karkosh, M.F.A.; J. Linnell, Ph.D.; VISITING ASSOCIATE PROFESSOR S. Travis, Ph.D.; ASSISTANT PROFESSORS J. Bakkom, M.F.A. (part-time); I. Jaffe, Ph.D.; J. Predock, M.A.; G. Schreiber, M.F.A.; LECTURERS G. Bakkom, B.A. (part-time); J. Bennahum, M.A. (part-time); L. Connor, M.F.A.; G. Glover, M.A. (part-time); L. MacDougal, M.F.A. (part-time); and new appointments to be made.

MAJOR STUDY

College of Fine Arts: see p. 69.
For teacher education and certification: see p. 43.

MINOR STUDY

24 hours of theatre arts courses which must include TA 120 and 121.

FEES

Students are reminded that charges for classroom supplies and services for certain theatre arts courses must be paid at the Fine Arts box office 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. 19.

THEATRE

101. **Voice and Diction. (3)** Training in effective use of the speaking voice; principles of voice production, diction, and phonetics. Non-majors only. {Fall}

102. **Voice and Diction. (3)** Training in use of the voice for oral interpretation with emphasis upon regional speech. Prerequisite: 101 or equivalent. {Spring}

115. **Theatre Appreciation. (3)** Introduction to the art and experience of theatre. Non-majors only. {Summer, Fall}

120. **Theatre Foundations I. (6)** Introduction to the creative, conceptual, and historical foundations of theatre and to the basic craft skills of theatrical production. Required of all TA majors. {Fall}

121. **Theatre Foundations II. (6)** Continuation of the foundations of theatre emphasizing an in-

troduction to performance. Prerequisite: 120. {Spring}

151. Artistic Traditions of the Southwest. (3)
(See Fine Arts 151.) {Fall}

165. Voice Technique for the Actor. (1-3)‡
Designed for acting students needing special group instruction and individual coaching for more effective voice production. Enrollment upon faculty recommendation and/or permission of the instructor. TA majors only. Prerequisite: 121 or equivalent. {Offered upon demand}

220. Theatre Foundations III. (9)
Integrative study of the collaborative process of theatrical art through the preparation and presentation of a performed production. Enrollment for 3 or 6 hours of work permitted in special cases upon faculty approval. {Fall}

221. Theatre Foundations IV. (9)
Continuation of 220 with classwork centered around the analysis, preparation, production, and performance of short plays. Enrollment for 3 or 6 hours of work permitted in special cases upon faculty approval. {Spring}

240. Makeup. (3)
The art of makeup for stage and television. Makeup crews on departmental productions required. {Fall, Spring}

267. Acting Skills Tutorial. (1-3)††
Small group and individualized training and coaching in basic acting skills. Enrollment upon faculty recommendation and/or permission of instructor. Prerequisite: 121 or equivalent. {Offered upon demand}

290. Professional Theatre Tour. (1-3)‡
Comprehensive tour of New York or London theatre. Post-trip critique required. Offered upon demand. {January, Summer}

297. Sophomore Practicum I. (1)
{Fall}

298. Sophomore Practicum II. (1)
{Spring}

320. Acting Studio I. (6)
Concentrated study of the drama and theatre of an historical period culminating in performance of a play from that period. (See also 322.) {Fall}

321. Acting Studio II. (3)
Emphasis on acting styles. {Spring}

322. Technical Workshop I. (6)
Concentrated study of the drama and theatre of an historical period culminating in production of a play from that period. (See also 320.) {Fall}

323. Technical Workshop II. (3)
Emphasis on special problems and processes in technical production. {Spring}

327. Textual Analysis in Drama. (3)
Dramatic, structural, and interpretive analysis of the playscript with emphasis upon bibliographic, historical, and other textual research skills. {Fall, Spring}

328. Language and Drama. (3)
Concepts and principles of language and speech applied to dramatic form, mode, style, dialogue, and characterization. Prerequisite: 327 or equivalent. {Offered upon demand}

335. [235] Theatre History I. [Theatre History] (3)
Development of dramatic writings and production techniques of theatre, beginning with the Greeks. {Fall}

336. [236] Theatre History II. [Theatre History] (3)
Continuation of 335 to present day. {Spring}

340. Special Problems in Makeup. (3)
Prerequisite: 240 or equivalent. {Offered upon demand}

350. Theatre Management. (3)
Principles of production, organization, programming, house management, budgets, advertising, and box office. Participation in departmental productions required. {Fall, Spring}

351. Television Drama. (3)
Basic techniques for the dramatic television program. {Offered upon demand}

352. Television Drama Production. [Advanced Television Drama Production] (3)
Prerequisite: 351. {Offered upon demand}

353. Introduction to Stage Management. (3)
The role, functions, and duties of the stage manager in production, rehearsal, and performance. {Offered upon demand}

355. Fundamentals of Playwriting I. (3)
Prerequisite: 327. Alternate years {Fall}

356. Fundamentals of Playwriting II. (3)
Prerequisite: 355. Alternate years. {Spring}

358. Lighting Methods and Equipment. (3)
Theory and practice of lighting for the stage. Lighting crews on departmental productions required. {Fall, Spring}

367. Acting Skills Tutorial. (1-3)††
Small group and individualized training and coaching in acting skills. Enrollment upon faculty recommendation and/or permission of instructor. {Offered upon demand}

375. Elements of Scene Design. [Fundamentals of Scene Design] (3)
Techniques and methods of design and painting. Scene crews on departmental productions required. {Fall, Spring}

380. [284] Costume History I. [Costume History] (3)
The history and psychology of dress and its relation to the role of the actor and to theatrical costume design. {Fall}

381. Costume History II. (3)
Prerequisite: 380. {Offered upon demand}

385. Elements of Costume Design. [Fundamentals of Costume Design] (3)
Techniques and methods of design for theatre. Costume crews on departmental productions required. {Fall, Spring}

397. Junior Practicum I. (2)
{Fall}

398. Junior Practicum II. (2)
{Spring}

***403. [305] Fundamentals of Directing I. [Fundamentals of Directing] (3)**
Methods and techniques for the director in planning, rehearsal, and performance. {Summer, Fall}

***404. [306] Fundamentals of Directing II. [Fundamentals of Directing] (3)**
Prerequisite: 403 or equivalent. {Offered upon demand}

***414. 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}

***415. 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}

***416. Planning the Educational Theatre Program. [Theatre Production for Teachers] (3)**
Preparation, organization, and operation of both the curricular and extracurricular phases of educational theatre programs in the schools. Prerequisite: 415 or equivalent. {Spring}

***417. Educational Theatre Workshop. (3-6)**
Participation in prearranged workshop productions. Prerequisite: 415 or equivalent. Not to exceed 9 hours without permission of the Committee on Studies. {Offered upon demand}

***420. Acting Studio III. (9)**
Advanced actor training conducted in context of period since 1900 and culminating in performance of either a modern scripted play or an improvisational piece. Prerequisites: 320-321 and 327. {Fall}

***421. Acting Studio IV. (9)**
Emphasis upon group experimentation and individual coaching for the development of advanced skills and techniques of characterization and performance. Prerequisite: 420. {Spring}

***428. Ensemble Improvisation. (3)‡**
(See Dance 451.) Creative improvisation combining variously the theatre arts of drama and dance, theatrical media, and music. {Offered upon demand}

***429. Summer Workshop. (1-3)‡**
{Summer}

***450. Internship in Theatre Management. (1-3)†**
Prerequisite: 350 or equivalent. {Offered upon demand}

***453. Advanced Stage Management. (3)**
Prerequisite: 353 or equivalent. Participation in the stage managing of departmental productions required. {Offered upon demand}

***455. Seminar in Playwriting. [Playwriting] (3)**
Emphasis upon analysis of student-written plays. Prerequisite: 355 or equivalent. Alternate years. {Fall}

***456. Playwriting Laboratory. [Playwriting] (3)‡**
Offered to provide playwriting students opportunities to work in response to the enactment of their developing playscripts. Prerequisite: 455 or equivalent. Alternate years. {Spring}

***458. Lighting Design I. (3)**
Prerequisite: 358. {Fall}

***459. Lighting Design II. (3)**
Prerequisite: 458. {Spring}

***475. Scene Design I. (3)**
Prerequisite: 375. {Fall}

***476. Scene Design II. (3)**
Prerequisite: 475. {Spring}

***485. Costume Design I. (3)**
Prerequisite: 385. {Fall}

***486. Costume Design II. (3)**
Prerequisite: 485. {Spring}

***487. Period Costume Patternmaking. (3)**
Prerequisite: 485 or 486 or equivalent. {Offered upon demand}

***491. Professional Apprenticeship. (1-6)†**
Qualified students accepted by a professional company (e.g., The Santa Fe Opera) may register for credit in technical production or in acting apprenticeship. Prerequisite: average of 3.0 or better in theatre arts courses. {Summer, Fall, Spring}

***495. Studies in Theatre. (1-3)‡**

496. Student Production Project. (1-3)†
{Fall, Spring}

497. Independent Study. (2-3)†
{Fall, Spring}

498. Senior Practicum. (2)
{Fall, Spring}

499. Senior Thesis. [Thesis] **(3-6)**
{Fall, Spring}

***500. Introduction to Graduate Study and Research. (3)**
{Fall}

***501. Dramatic Theory and Critical Analysis. (3)**
{Spring}

***509. Internship in Theatre Production. (6-9)**

***510. Internship in Educational Theatre. (6-9)**

***550. Advanced Topics in Theatre. (3)‡**

***590. Individual Problems. (1-3)†**

***599. Master's Thesis. (1-6 per semester)**

DANCE

108. Introduction to Dance I. (1)
(Also offered as PE 126.) Techniques and practice of basic motor skills and their application to aesthetic communication. {Fall}

109. Introduction to Dance II. [Introduction to Dance] **(1)**
Continuation of 108. {Spring}

210. [110] **Modern Dance I. (1-3)‡**
Beginning modern techniques. Basic technique of modern dance, including barre work, center work, isolation falls and recoveries, contraction and release, resisting and yielding, and awareness of personal and environmental space. Audition required. {Fall, Spring}

212. Improvisation and Chance. (1)‡
Exploration of personal resources in which students create their own improvisational structures. {Offered upon demand}

222. Rhythmic Fundamentals. (2)
An introduction of basic rhythmic patterns involving music and movement, including breathing and percussion. {Fall}

°249. Ballet I. [Ballet] **(1-3)‡‡**
Introduction to basic ballet techniques emphasizing Russian and Cechetti approaches. Audition required. {Fall, Spring}

262. History of Dance I. (3)
Cultural influences on dance throughout western civilization; primitive, ancient, and medieval. {Fall}

263. History of Dance II. (3)
Renaissance to the present day. Prerequisite: 262. {Spring}

308. Studies in Ballet Forms. (1)‡
Various techniques of ballet training such as pas de deux, variations, pointe work, and adagio. Audition required. {Fall, Spring}

310. [210] **Modern Dance II. (1-3)‡**
Various techniques in modern dance in America (e.g., Graham, Limon, Humphrey-Weidman, and Cunningham). Prerequisite: 210 or equivalent. Audition required. {Fall, Spring}

°311. Studies in Forms of Choreography. [Choreography II] **(3)‡**
Developing the skills of editing and selecting dance materials for individual and group compositions. Exploration of preclassic and modern dance forms. Audition required. {Offered upon demand}

312. Composition. [Improvisation and Composition] **(1-2)‡**
Audition required. {Offered upon demand}

313. Movement and Rhythmic Structure. (3)
The understanding of the basic underlying movement rhythm. Audition required. {Spring}

314. Kinesiology for Dance. [Anatomy for Dancers] **(3)**
Structural analysis of movement. Basic understanding of the skeleton and neuromuscular systems of the human body as applied to dance movement. Audition required. {Offered upon demand}

349. Ballet II. (1-3)‡
Prerequisite: 249 or equivalent. Audition required. {Fall, Spring}

368. Ethnic Dance. (3)‡
Movement experiences in various ethnic dance forms. Film viewing and analysis of dance works. {Offered upon demand}

°410. [310] **Modern Dance III. (1-3)‡**
Prerequisite: 310 or equivalent. Audition required. {Fall, Spring}

°449. Ballet III. (1-3)‡
Prerequisite: 349 or equivalent. Audition required. {Fall, Spring}

°451. Exploratory Movement. (3)‡‡
(See TA 428.) Creative improvisation combining variously the theatre arts of dance and drama, theatrical media, and music. {Offered upon demand}

466. [366] **Theory and Practice of Teaching Dance. (3)**
(Also offered as PE 366.) Methods and materials for teaching modern dance. Supervised practice teaching in local elementary, junior, and high schools. {Offered upon demand}

495. Special Studies in Dance. (3)‡
{Offered upon demand}

FILM

Students are reminded that charges for classroom supplies and services for certain film courses must be paid at the Fine Arts box office 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. 19.

210. Introduction to Film. (3)
Survey and critical analysis of the development of the motion picture as an art form. Screening of major films. {Fall}

250. Film Comedy. (3)
Forms, modes, and techniques of comedy in film. {Spring}

***327. History of the Film I.** [History of the Film] **(3)**
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.** [History of the Film] **(3)**
History of the motion picture from the advent of sound to the present day. Screening and analysis of major films. {Spring}

390. Elements of Filmmaking. (3)
Practicum in basic conceptual and technical aspects of independent filmmaking. {Spring}

***427. Topics in Film History. (3)‡**
Seminar on issues and theories of the development of cinematic art. May be repeated as content varies. {Fall}

WOMEN STUDIES

COMMITTEE IN CHARGE: selected annually from interested faculty, students, and staff. ASSISTANT PROFESSOR G. Baker, Ph.D. (American Studies), Coordinator.

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 yet available. 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 listing is available each semester at the Women Studies office.

° Open to graduate students and to undergraduates enrolled in the preprofessional curricula of the College of Fine Arts. Exceptions may be made with permission of the department chairperson.

‡‡ May be taken three times for credit. Instructor and the Committee on Studies must approve additional repetition of this course.

Gen St 299. Individual Studies. (3)
Introduction to Women Studies.

Amer St 231. Women's Experience in the United States. (3)‡

Amer St 301-302 Interdepartmental Studies in the Culture of the United States. (3, 3)‡

Amer St 312. The Black Woman. (3)

Amer St 331. Classics of Feminism in the United States. (3)

Amer St 342. La Mujer Chicana. (3)

***Amer St 501. Interdepartmental Seminar in the Culture of the United States. (3)‡**
American Women Writers.

***Anth 341. Biosocial Bases of Sex Roles. (3)**

Econ 239. Economics of Feminism. (3)

Ed Fdn 293. [247] **Topics. (1-3)**
History of Women in Education.

Ed Fdn 384. Women and Self-Education. (3)

Ed Fdn 493. [447] **Topics. (1-3)**
Psychology of Women, Sexism in Education.

Engl 280. Readings in Literature. (3)
Fallen Women in Literature.

Engl 300. Studies in Literature. (3)‡
Women in Literature.
Women in Asian Literature.
Modern Feminist and Sexist Fiction.

Engl 360. Individual Authors. (3)‡
Virginia Woolf.
Women Writers of the South.
The Brontes.
Willa Cather.

Engl 459. Irish Literature. (3)
Image of Irish Women in Literature.

Engl 470. Contemporary Literature. (3)‡
Contemporary Women Poets.

***Engl 488. Special Topics. (3)**
Images of Victorian Women.

***Engl 580. Special Topics: History of Idea, Literarary Movements, etc. (3)**
Twentieth-Century Women Writers.

***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)

***H Ec 293.** [247] **Topics. (1-3)‡**
Maternal and Infant Nutrition.

***H Ec 493.** [447] **Topics. (1-3)‡**
Maternal and Infant Nutrition.

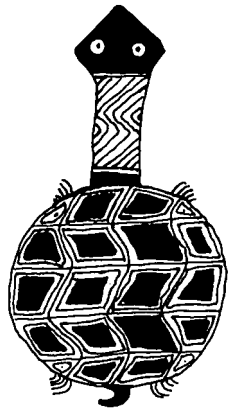
Nurs 307. Problems in Nursing: Selected Topics. (3)
Women and Health Care.

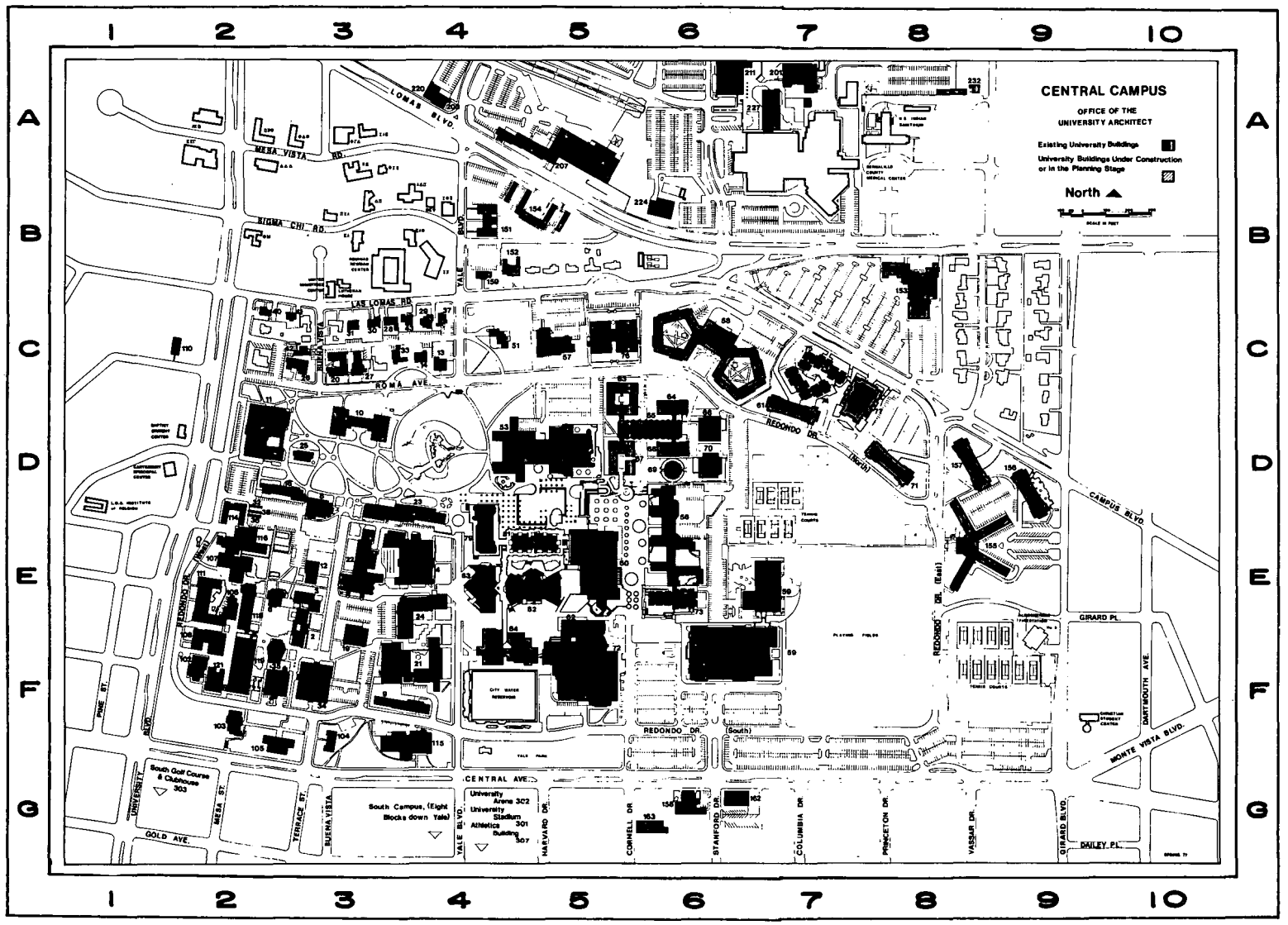
Phil 241. Philosophic Problems. (3)‡

***Pol Sci 300. Political Topics. (3)‡**
Women and the Law—Public Sphere.
Women and the Law—Private Sphere.

Pol Sci 420. Undergraduate Seminar. [Comparative Seminar—Government and Politics] **(3)**
Sex and Politics.

***Pol Sci 521. Research Seminar in Government and Politics. (3)**
Sex and Politics.





Central Campus Legend of Buildings
(Alphabetical Listing)

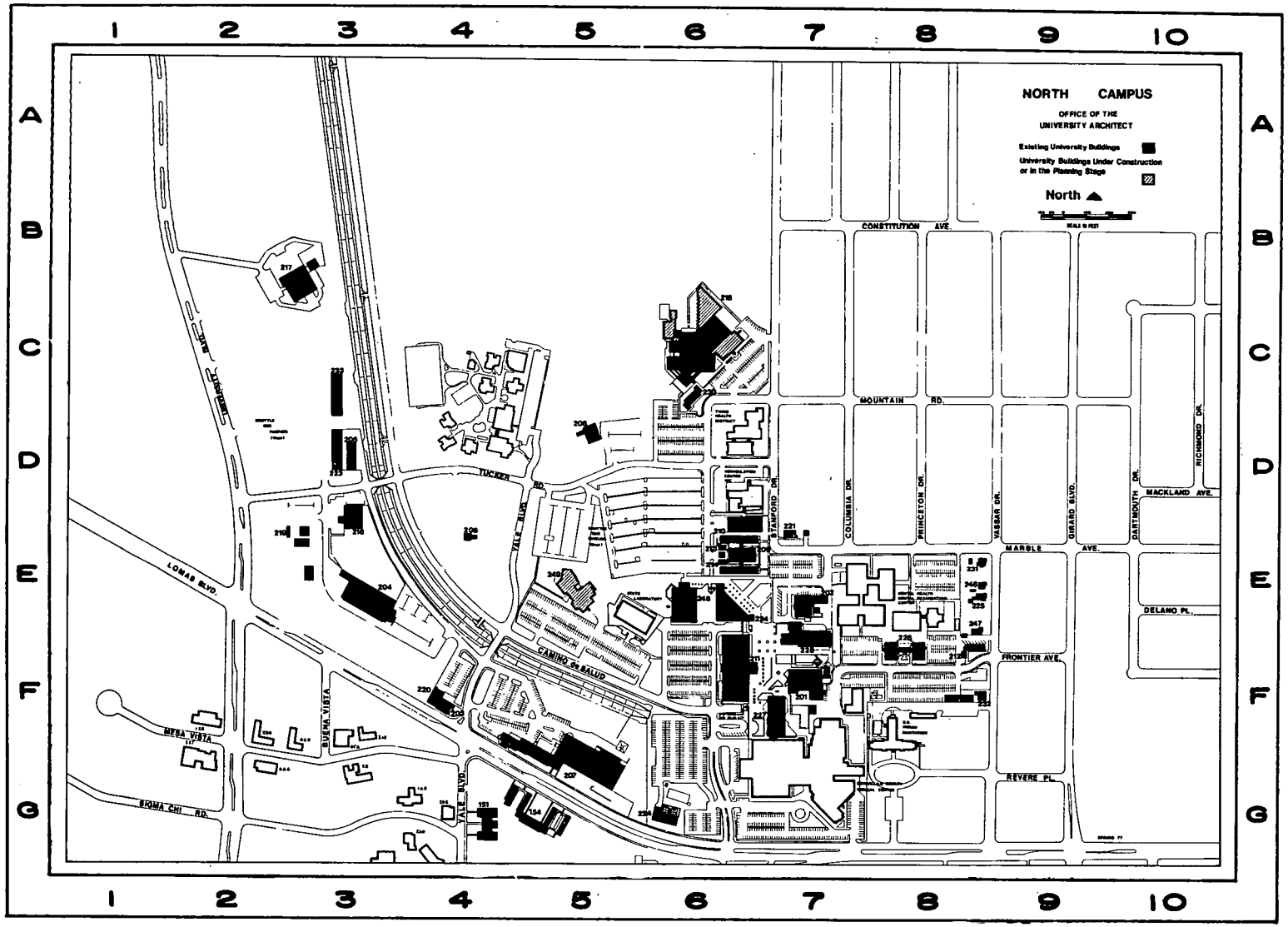
(The parenthetical number matches map numbering, the letter-number combination designates location by map coordinates.)

- Administration (Scholes Hall) (10) D-3
- Alumni Memorial Chapel (25) D-3
- Alvarado Hall (Dormitory) (157) D-8
- Anthropology (11) D-2
- Apartments for Married Students (154) B-5
- Architecture (158) G-6
- Art (84) F-4
- Art Annex (105) F-2
- Art Annex II (102) F-2
- Art Department Crafts Annex (2) E-3
- Art Education (68) D-6
- Athletics (307) ..... South Campus
- B-2 (Dental Programs) (114) D-2
- Bandelier Hall (Departmental Offices) (16) D-2
- Bandelier, East (Departmental Offices) (8) D-3
- Biology (Castetter Hall) (21) F-4
- Biology Annex (19) E-3
- Bookstore (83) E-4
- Business and Administrative Sciences Building, Anderson School of (76) C-5
- Carlisle Gym (4) E-4
- Chemical Engineering (111) E-2
- Chemistry (Clark Hall) (22) E-3
- Civil Engineering (Wagner Hall) (117) E-2
- Civil Engineering Research Laboratory (106) E-2
- Computing Center (153) B-4
- Continuing Education & Community Services (203) A-4
- Coronado Hall (Dormitory) (155) E-8
- DeVargas Hall (Dormitory) (75) C-7
- Education Administration (65) D-6
- Education Classroom Building (67) D-5
- Education Office Building (63) C-5
- Electrical Engineering (Tapy Hall) (118) E-2
- Engineering Shops and Laboratories (108) F-2
- Farris Engineering Center (119) F-2
- Fine Arts Center (62) F-5
- Ford Utilities Center (116) E-2
- Geology (Northrop Hall) (24) E-4
- Golf Course Clubhouse (303) ..... South Campus
- Hodgin Hall (103) F-2
- Hokona Hall (Dormitory) (58) C-6
- Home Economics (66) D-6
- Home Management House (110) C-1
- Humanities Building (81) D-5
- Industrial Arts (64) C-6
- ISRAD Wing (in Sch. of Bus. & Admin. Sci Bldg.) C-5
- 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
- Manzanita Center (Educational Laboratory) (70) D-6
- Marron Hall (Departmental Offices) (9) F-3
- Mechanical Engineering (107) E-2
- Mesa Vista Hall (Departmental Offices) (56) E-6
- Mitchell Hall (Classrooms) (23) D-3
- Naval Science (151) B-4
- New Mexico Union (60) E-5
- Nuclear Engineering Laboratory (121) F-2
- Oñate Hall (156) D-9
- Ortega Hall (offices and classrooms) (79) D-4
- Police and Parking Services (1821 Roma NE) (113) C-4
- Parsons Hall (3) E-3
- Physics-Astronomy (207) A-5
- Physics Labs and Lecture Hall (35) F-2
- Popejoy Hall (72) F-5
- President's Home (51) C-4
- Psychology (34) F-3
- Santa Ana Hall (Dormitory) (71) D-8
- Santa Clara Hall (Dormitory) (61) C-7
- Sara Raynolds Hall (104) F-3
- Speech Communications (20) C-3
- Student Health Center—University College (73) E-6
- Tamarind Institute (163) G-6
- University Arena (302) ..... South Campus
- University Stadium (301) ..... South Campus
- Woodward Lecture Hall (82) E-5
- 609 Buena Vista NE (42) C-3
- 2701 Campus NE (153) B-8
- 2500 Central SE (162) G-6
- 1700 Las Lomas NE (40) C-2
- 1712 Las Lomas NE (41) C-3
- 1804 Las Lomas NE (31) C-3
- 1808 Las Lomas NE (30) C-3
- 1812 Las Lomas NE (28) C-3
- 1816 Las Lomas NE (43) C-3
- 1820 Las Lomas NE (29) C-4
- 1824 Las Lomas NE (37) C-4
- 1901 Las Lomas NE (159) B-4
- 1717 Roma NE (26) C-3
- 1805 Roma NE (27) C-3
- 1815 Roma NE (33) C-4
- 1819 Roma NE (14) C-3
- 1821 Roma NE (13) C-3
- 1915 Roma NE (57) C-5

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 E-3
- 3. Parsons Hall E-3
- 4. Carlisle Gym E-4
- 6. Lecture Hall E-2
- 8. Bandelier East (Departmental Offices) D-3
- 9. Marron Hall (Departmental Offices) F-3
- 10. Administration (Scholes Hall) D-3
- 11. Anthropology D-2
- 13. Police and Parking Services (1821 Roma NE) C-4
- 14. 1819 Roma NE C-4
- 16. Bandelier Hall (Departmental Offices) D-2
- 19. Biology Annex E-3
- 20. Speech Communications 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. 1717 Roma NE C-3
- 27. 1805 Roma NE C-3
- 28. 1812 Las Lomas NE C-3
- 29. 1820 Las Lomas NE C-4
- 30. 1808 Las Lomas NE C-3
- 31. 1804 Las Lomas NE C-3
- 33. 1815 Roma NE C-4
- 34. Psychology F-3
- 35. Physics Labs and Lecture Hall F-2
- 37. 1824 Las Lomas NE C-4
- 40. 1700 Las Lomas NE C-2
- 41. 1712 Las Lomas NE C-3
- 42. 609 Buena Vista NE C-3
- 43. 1816 Las Lomas 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-5
- 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-6
- 66. Home Economics D-6
- 67. Education Classroom Building D-5
- 68. Art Education D-6
- 69. Kiva 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 Bus. & Admin. Sci. Bldg (includes ISRAD Wing) 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 E-4
- 84. Art F-4
- 102. Art Annex II F-2
- 103. Hodgin Hall F-2
- 104. Sara Raynolds Hall F-3
- 105. Art Annex F-2
- 106. Civil Engineering Research Laboratory E-2
- 107. Mechanical Engineering E-2
- 108. Engineering Shops and Laboratories F-2
- 110. Home Management House C-1
- 111. Chemical Engineering E-2
- 114. B-2 (Dental Programs) D-2
- 115. Journalism F-3
- 116. Ford Utilities Center E-2
- 117. Civil Engineering (Wagner Hall) E-2
- 118. Electrical Engineering (Tapy Hall) E-2
- 119. Farris Engineering Center F-2
- 121. Nuclear Engineering Laboratory F-2
- 151. Naval Science B-4
- 152. Jonson Gallery B-4
- 153. Computing Center (2701 Campus NE) B-8
- 154. Apartments for Married Students B-5
- 155. Coronado Hall (Dormitory) E-8
- 156. Oñate Hall D-9
- 157. Alvarado Hall (Dormitory) D-8
- 158. Architecture G-6
- 159. 1901 Las Lomas NE B-4
- 162. 2500 Central SE G-6
- 163. Tamarind Institute G-6
- 203. Continuing Education & Community Services A-4
- 207. Physics-Astronomy A-5
- 301. University Stadium ..... South Campus
- 302. University Arena ..... South Campus
- 303. Golf Course Clubhouse ..... South Campus
- 307. Athletics Building ..... South Campus



North Campus Legend of Buildings
(Alphabetical Listing)

(The number listed matches map numbering, the letter-number combination designates location by map coordinates.)

Apartments for Married Students (154) G-5
Automotive Building (216) D-3
Cancer Research and Treatment Center (227) F-7
Continuing Education (203) F-4
Dental Programs (249) E-5
Family Practice Unit & Community Medicine/ Psychiatry Ctr. (248) E-6
Golf Course Club House (206) D-5
Health Sciences Learning Resources Center (234) .. E-6
KNME-TV Studio (217) B-3
Law (Bratton Hall) (218) C-6
Medicine, School of
- Animal Facilities (213 & 214) E-6
- Basic Medical Sciences (211) F-6
- Department of Community Medicine (209) ... E-6
- Department of Medicine—Research (209) E-6
- Department of Neurology and Convulsive Disorder Unit (210) E-6
- Department of Psychiatry (202) E-7
- Laboratory Science—Regional Medical Program (209) E-6
- Library of Medical Sciences (201) F-7
- Regional Medical Program (226) F-7
- Regional Medical Program Annex (212) F-8

Naval Science (151) G-4
New Mexico Accident Investigation Facility (219) E-3
New Mexico Law Center (230) C-6
North Campus Chilled Water Plant (224)..... G-6
Nursing-Pharmacy (228) F-7
Observatory (208) E-4
Physics-Astronomy (207)..... G-5
Services Building (204) E-3
Surge Building (2701 Frontier Pl. NE) (226)..... F-7
Temporary Storage Building (205) D-3
Warehouses (223) and (233) D-3
Temp. Warehouse (205) D-3
1000 Stanford NE (221) E-7
1837 Lomas NE (220) F-4
815 Vassar NE (232) F-8
905 Vassar NE (247) E-8
917 Vassar NE (225) E-8
919 Vassar NE (246) E-8
925 Vassar NE (231) E-8

North Campus Legend of Buildings
(Numerical Listing)

(The first number listed matches map numbering, the letter-number combination designates location by map coordinates.)

151. Naval Science G-4
154. Apartments for Married Students G-5
201. Library of the Medical Sciences F-7
202. Department of Psychiatry E-7
203. Continuing Education F-4
204. Services Building E-3
205. Temporary Storage Building D-3
206. Golf Course Club House D-5
207. Physics-Astronomy G-5
208. Observatory E-4
209. Laboratory Sciences, Regional Medical Program; Department of Community Medicine; Research, Department of Medicine E-6
210. Department of Neurology and Convulsive Disorder Unit E-6
211. Basic Medical Sciences Building, School of Medicine F-6
212. Regional Medical Program Annex F-8
213, 214. Animal Facilities, School of Medicine .. E-6
216. Automotive Building D-3
217. KNME-TV Studio B-3
218. Law (Bratton Hall) C-6
219. New Mexico Accident Investigation Facility . E-3
220. 1837 Lomas NE F-4
221. 1000 Stanford NE E-7
223. Warehouse D-3
224. North Campus Chilled Water Plant G-6
225. 917 Vassar NE E-8
226. Regional Medical Program; Surge Building (2701 Frontier Pl. NE) F-7
227. Cancer Research and Treatment Center F-6
228. Nursing-Pharmacy F-7
230. New Mexico Law Center C-6
231. 925 Vassar NE E-8
232. 815 Vassar NE F-8
233. Warehouse D-3
234. Health Sciences Learning Resources Center .. E-6
246. 919 Vassar NE E-8
247. 905 Vassar NE E-8
248. Family Practice & Community Medicine/ Psychiatry Ctr. E-6
249. Dental Programs E-5

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