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DIRECTIONS FOR CORRESPONDENCE

The post office address of The University of New Mexico is Albuquerque, New Mexico 87106. 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

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

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

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

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

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

EVENING NON-CREDIT COURSES ..... Division of Continuing Education

HOUSING INFORMATION—DORMITORIES AND MARRIED HOUSING ..... Housing Director

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

STUDENT EMPLOYMENT ..... Director of Student Aids

AIR FORCE RESERVE OFFICERS TRAINING CORPS ..... Air Force R.O.T.C. Unit

NAVAL RESERVE OFFICERS TRAINING CORPS ..... Executive Officer, Naval R.O.T.C. Unit

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

EXPENSES ..... Comptroller

INDEPENDENT STUDY AND EXTENSION COURSES ..... Division of Continuing Education

STUDENT AFFAIRS ..... Vice President for Student Affairs

PERSONAL WELFARE ..... Dean of Students

ACADEMIC ADVISEMENT ..... University College

VOCATIONAL AND PERSONAL COUNSELING ..... Counseling Center

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. The Information desk of the Office of Admissions and Records, Room 102, Scholes Hall (Administration Building) is also open 12:00 to 1:00 Monday through Friday and 8:00 to 12:00 most Saturdays. Office hours of the University Cashier are 8:30 to 12:00 and 1:00 to 3:30 Monday through Friday. Administrative offices are open during most of the days of the official student recess periods.

TABLE OF CONTENTS

Directions for Correspondence 2

Campus Maps 4-7

Academic Calendar 8-10

Glossary of College Terms 11-12

The Regents of the University 13

Administrative Offices and Officers 14-19

Emeriti 20-22

Faculty 23-79

General Information 80-102

Admission and Registration 103-115

Student Expenses 116-120

Student Housing 121-124

Financial Aid 125-147

Student Services 148-154

General Academic Regulations 155-169

University College 171-178
Bachelor of University Studies; Associate of Arts in Human Services Degree; Associate of Science in Laboratory Technology Degree; Two-Year Secretarial Program

College of Arts and Sciences 179-191
Division of Inter-American Affairs, Departments of Anthropology, Biology, Chemistry, Economics, English, Geography, Geology, History, Journalism, Mathematics and Statistics, Modern and Classical Languages, Philosophy, Physics and Astronomy, Political Science, Psychology, Sociology, Speech Communication

School of Business and Administrative Sciences 192-200
Bachelor of Business Administration Program; Three-Two Program

College of Education 201-230
Departments of Art Education, Educational Administration, Educational Foundations, Educational Media, Elementary Education, Guidance and Special Education, Health, Physical Education, and Recreation, Home Economics, Secondary Education; Curricula in Business Education, Industrial Education, Library Science (see Educational Media), Music Education

College of Engineering 231-245
Departments of Chemical Engineering, Civil Engineering, Electrical Engineering and Computer Science, Mechanical Engineering, Nuclear Engineering

College of Fine Arts 246-256
Departments of Architecture, Art, Music, Music Education, Theatre Arts

The Graduate School 257-258

School of Law 259-260

School of Medicine 261-268

College of Nursing 269-274

College of Pharmacy 275-287
Pharmacy, Dental Programs

Other Divisions of the University 288-295
Television Programming; Division of Continuing Education; Off-Campus Residence Centers, Division of Public Administration; Air Force ROTC; Naval ROTC

Courses of Instruction (listed alphabetically by departments) 296-509

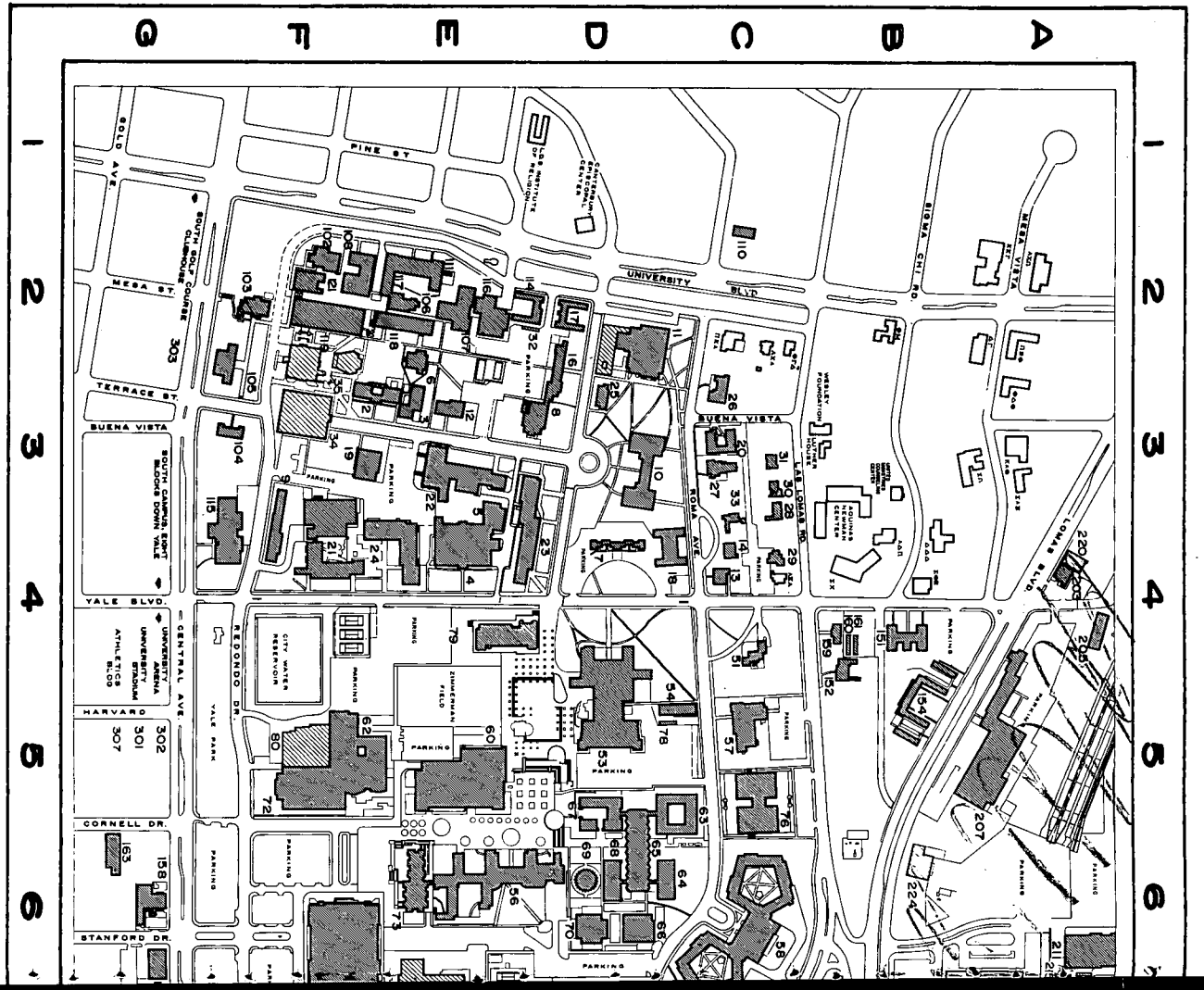
Enrollment and degree statistics 510

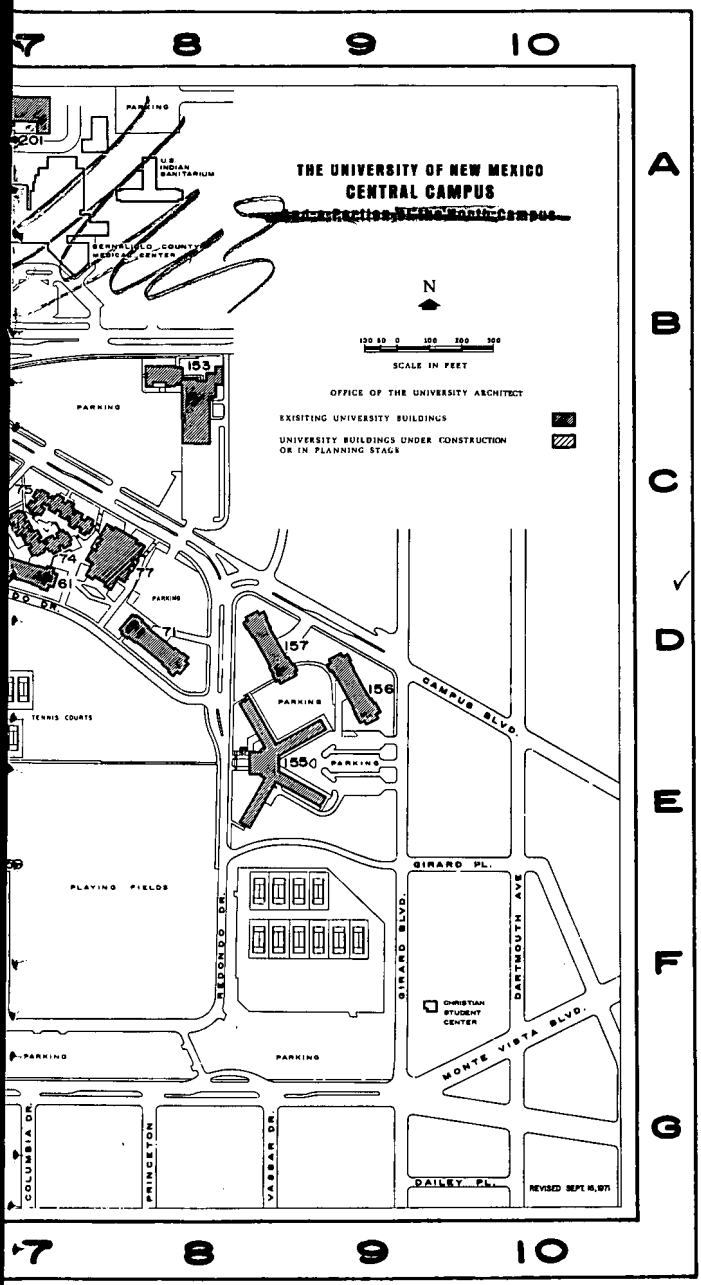
Index 511

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
5. Veterans' Affairs E-3
6. Lecture Hall E-2
7. Yatoka Hall D-4
8. Bandelier East (Departmental Offices) D-3
9. Marron Hall (Departmental Offices) F-3
10. Administration (Scholes Hall) D-3
11. Anthropology D-2
12. State Public Health Laboratory E-3
13. 1821 Roma NE C-4
14. 1819 Roma NE C-4
16. Bandelier Hall (Departmental Offices) D-2
17. B-1 ..... D-2
18. Y-1 ..... C-4
19. Pharmacy E-3
20. Speech 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 (under constr'n) F-3
35. Physics (under constr'n) F-2
51. President's Home C-4
53. Zimmerman Library D-5
54. T-10 (Placement Center) C-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 and Counseling Center E-6
74. Laguna Hall (Dormitory) C-7
75. DeVargas Hall (Dormitory) C-7
76. School of Business and Administrative Sciences Building (including ISRAD Wing) C-5
77. La Posada (Dining Hall) C-8
79. Faculty Office-Classroom Building (Ortega Hall) D-4



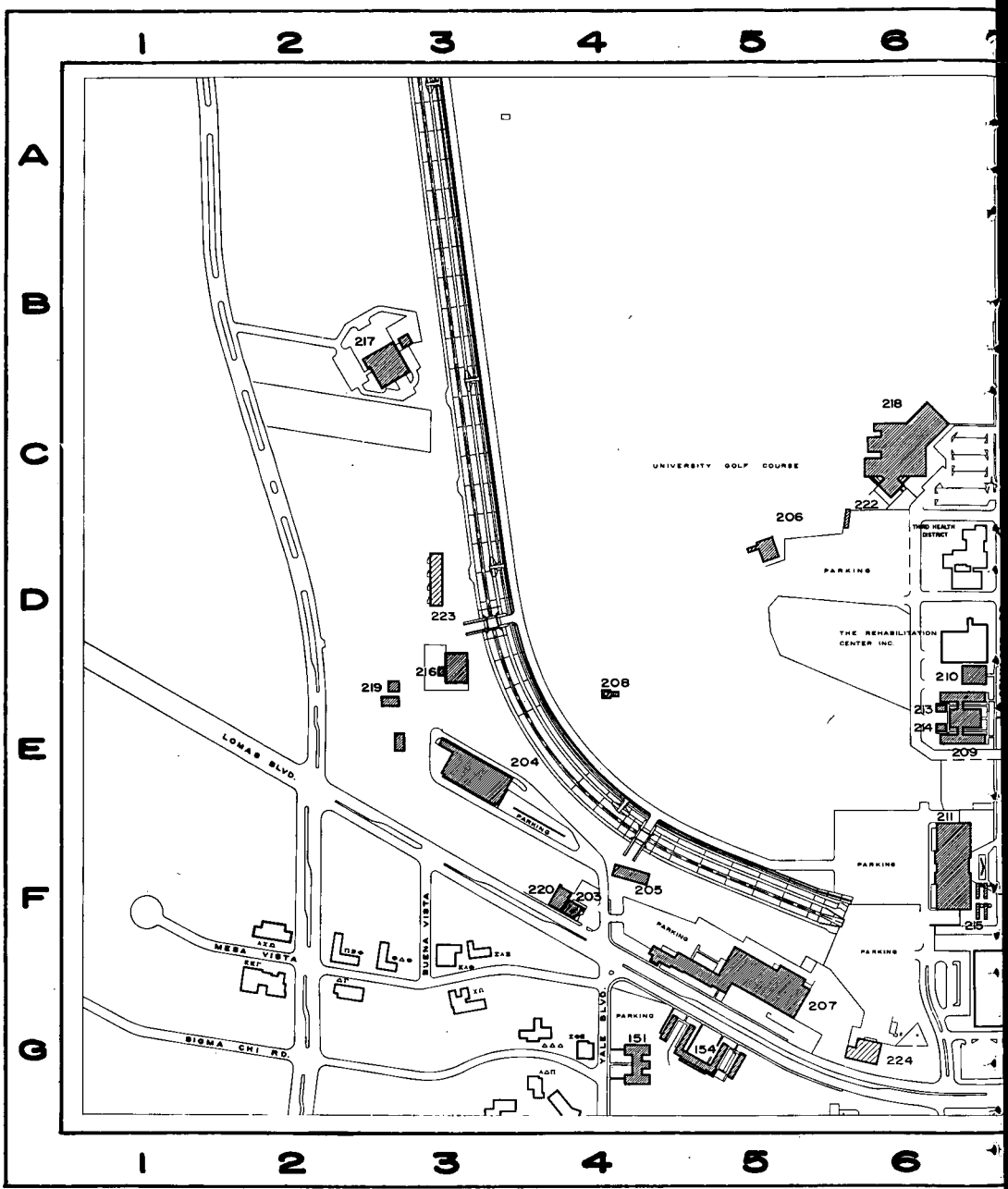


Central Campus Legend of Buildings
(Alphabetical Listing)

(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 (105) F-2
- Art Department Crafts Annex (2) E-3
- Art Education (68) D-6
- Athletics (307) ..... South Campus
- ~~B-1 (Dental Programs) (114) ..... D-2~~
- 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
- Business and Administrative Sciences Building, 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
- ~~Engineering Laboratories (202) ..... A-4~~
- Coronado Hall (Dormitory) (155) E-8
- De Vargas Hall (Dormitory) (75) C-7
- Drama (102) F-2
- Drama (under constr'n) (80) F-5
- Education Administration (65) D-6
- Education Classroom Building (67) D-5
- Education Office Building (63) C-5
- Electrical Engineering (118) E-2
- Engineering Shops and Laboratories (108) F-2
- Faculty Office-Classroom Building (Ortega Hall) (79) D-4
- Farris Engineering Center (119) F-2
- Fine Arts Center (62) F-5
- Ford Utilities Center (116) E-2
- Geology (Northrop Hall) (24) E-4
- Hodgin Hall (103) F-2
- Hokona Hall (Dormitory) (58) C-6
- Home Economics (66) D-6
- Home Management House (110) C-1
- Industrial Arts (64) C-6
- ISRAD Wing (In Sch. of Bus. & Admin. Sci. Bldg.)
- 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
- ~~Medicine, School of~~
- ~~Basic Medical Sciences (211) ..... A-6~~
- ~~Library of Medical Sciences (201) ..... A-7~~
- 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 (Dormitory) (156) D-9
- Parsons Hall (3) E-3
- Pharmacy (19) E-3
- ~~Physics (under constr'n) (88) ..... F-2~~
- ~~Physics-Astronomy (217) ..... A-5~~
- Popejoy Hall (72) F-5
- President's Home (51) C-4
- Psychology ~~(under construction)~~ (34) F-3
- ~~Rifle Range (205) ..... A-4~~
- Santa Ana Hall (Dormitory) (71) D-8
- Santa Clara Hall (Dormitory) (61) C-7
- Sara Raynolds Hall (104) F-3
- Speech (20) C-3
- State Public Health Laboratory (12) E-3
- Student Health Center—University College and Counseling Center (73) E-6
- T-10 Career Services Center (54) C-5
- Tamarind Institute (163) G-6
- University Arena (302) ..... South Campus
- University Stadium (301) ..... South Campus
- Veterans' Affairs (5) E-3
- Y-1 (18) C-4
- Yatoka Hall (7) D-4
- 2701 Campus NE (153) B-8
- 2500 Central SE (162) G-6
- 1804 Las Lomas NE (31) C-3
- 1808 Las Lomas NE (30) C-3
- 1812 Las Lomas NE (28) C-3
- 1820 Las Lomas NE (29) C-4
- 1901 Las Lomas NE (159) B-4
- ~~1837 Lomas NE (220) ..... A-4~~
- 1717 Roma NE (26) C-3
- 1805 Roma NE (27) C-3
- 1815 Roma NE (33) C-4
- 1819 Roma NE (14) C-4
- 1821 Roma NE (13) C-4
- 1915 Roma NE (57) C-5

80. Drama (under constr'n) F-5
102. Drama F-2
103. Hodgin Hall F-2
104. Sara Raynolds Hall F-3
105. Art 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 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. 2701 Campus NE B-8
154. Apartments for Married Students B-5
155. Coronado Hall (Dormitory) E-8
156. Oñate Hall (Dormitory) 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
201. Library of the Medical Sciences A-7
203. Continuing Education A-4
205. Rifle Range A-4
207. Physics-Astronomy A-5
211. Basic Medical Sciences Building, School of Medicine A-6
220. 1837 Lomas NE A-4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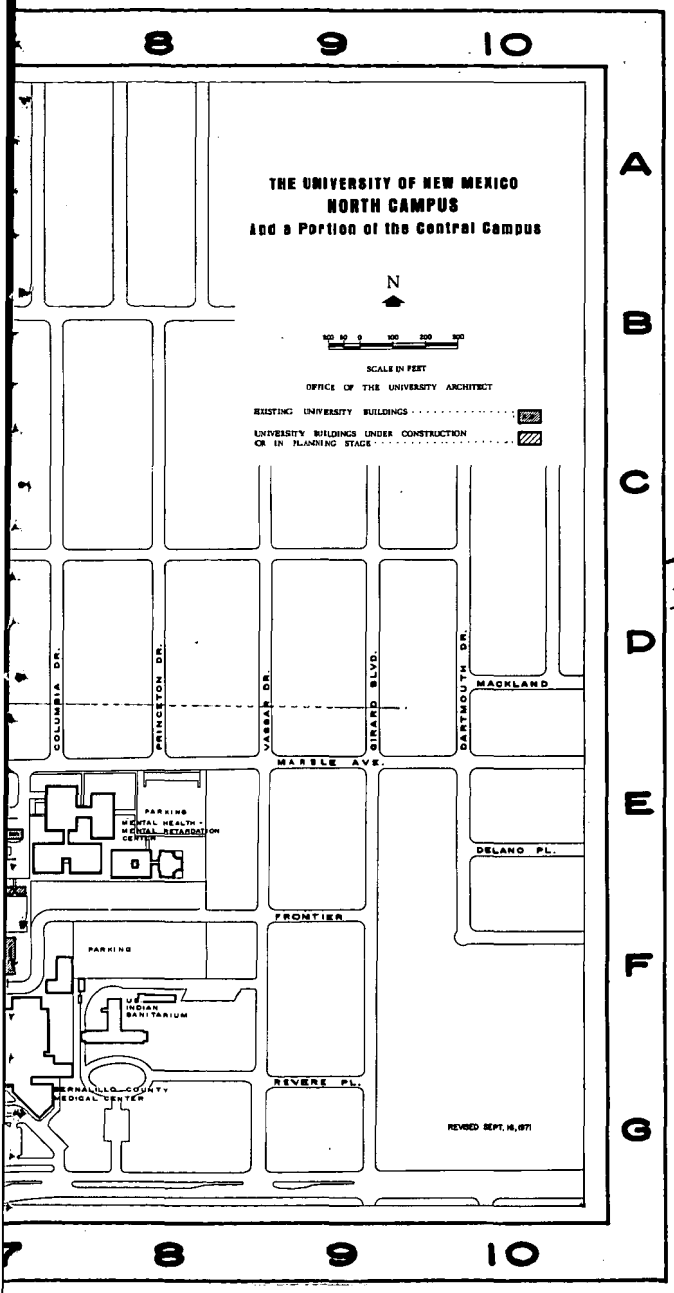

North Campus Legend of Buildings
(Alphabetical Listing)

(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
Continuing Education (203) F-4
Golf Course Club House (206) D-5
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 Sciences—Regional Medical Program (209) E-6
- Library of Medical Sciences (201) F-7
- Maternity and Infant Care Project (215) D-6
- Regional Medical Program (212) E-7

Naval Science (151) G-4
New Mexico Accident Investigation Facility (219) .. E-3
~~North Campus Chiller Plant (under constr'n) (224)~~ G-6
Observatory (208) E-4
Physics-Astronomy (207) G-5
~~Rifle Range (205)~~ F-4
Services Building (204) E-3
Warehouse (223) D-3
1000 Stanford NE (221) E-7

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. Rifle Range ..... F-4~~
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 E-7
213, 214. Animal Facilities, School of Medicine ... E-6
215. Maternity and Infant Care Project, School of Medicine D-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 Las Lomas NE F-4
221. 1000 Stanford NE E-7
223. Warehouse D-3
224. North Campus Chiller Plant (under constr'n) G-6
301. University Stadium ..... South Campus
302. University Arena ..... South Campus
307. Athletics ..... South Campus

1972

JANUARY						
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1972-73 ACADEMIC CALENDAR

1972 SUMMER SESSION **1972**

LAST DAY FOR RECEIPT OF UNDERGRADUATE APPLICATION AND CREDENTIALS OR APPOINTMENT REQUEST FOR ASSURANCE OF JUNE 10 REGISTRATION ..... **June 3, Sat. Noon**

New Student Orientation ..... June 9, Fri.

Advisement and Registration ..... June 10, Sat.

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

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

End of Second Week; $5 Change of Program Fee applies ..... June 23, Fri., 5 p.m.

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

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

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

1972 ANTHROPOLOGY FIELD SESSION

Registration ..... June 10, Sat.

Field Session ends ..... July 21, Fri.

DEADLINE FOR RECEIPT OF ADMISSION APPLICATIONS AND CREDENTIALS FOR FALL SEMESTER ..... **July 1**

Note: It may become necessary to close admissions at an earlier date if numbers of students admitted reach the maximum that can be accommodated.

1972 FALL SEMESTER **1972**

New Student Orientation Period ..... Aug. 21, Mon.-Aug. 23, Wed.

Walk-through Registration ..... Aug. 24, Thu.-Aug. 25, Fri.

Instruction begins; Late Registration Fee applies ..... Aug. 28, Mon.

Late Registration closes ..... Sept. 2, Sat. noon

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

End of Second Week; last day for additions to programs of registered students ..... Sept. 8, Fri., 5 p.m.

End of Fourth Week; $5 Change of Program Fee applies ..... Sept. 22, Fri., 5 p.m.

Midsemester ..... Oct. 20, Fri.

Homecoming, holiday ..... Nov. 4, Sat.

End of Twelfth Week; last day for withdrawal from course without grade ..... Nov. 17, 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. 8, Fri.-Dec. 21, Thu.

*Pre-examination Week ..... Dec. 8, Fri.-Dec. 14, Thu.

*Semester Final Examinations ..... Dec. 15, Fri.-Dec. 21, Thu.

Semester ends; last day for removal of Incomplete grade ..... Dec. 21, Thu., 10 p.m.

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

1972-73 ACADEMIC CALENDAR

DEADLINE FOR RECEIPT OF ADMISSION APPLICATIONS AND CREDENTIALS FOR SPRING SEMESTER ..... **Dec. 1**

Note: It may become necessary to close admissions at an earlier date if numbers of students admitted reach the maximum that can be accommodated.

1973 SPRING SEMESTER	**1973**
New Student Orientation Period	Jan. 15, Mon.-Jan. 17, Wed.
Walk-through Registration	Jan. 19, Fri.
Instruction begins; Late Registration Fee applies	Jan. 22, Mon.
Late Registration closes	Jan. 27, Sat. noon
End of Second Week; last day for additions to programs of registered students	Feb. 2, Fri., 5 p.m.
End of Fourth Week; $5 Change of Program Fee applies	Feb. 16, Fri., 5 p.m.
Midsemester	Mar. 16, Fri.
Spring Recess begins	Mar. 17, Sat., 10 p.m.
Classes resume	Mar. 26, Mon., 7:30 a.m.
Honors Assembly	To be arranged
End of Twelfth Week; last day for withdrawal from course without grade	Apr. 20, Fri., 5 p.m.
*Closed Period:	May 7, Mon.-May 19, Sat.
*Pre-examination Week	May 7, Mon.-May 13, Sun.
*Semester Final Examinations	May 14, Mon.-May 19, Sat.
Semester ends; last day for removal of Incomplete grade	May 19, Sat., 10 p.m.
Commencement	May 20, Sun.

1973 SUMMER SESSION	**1973**
LAST DAY FOR RECEIPT OF UNDERGRADUATE APPLICATION AND CREDENTIALS OR APPOINTMENT REQUEST FOR ASSURANCE OF JUNE 2 REGISTRATION	**May 25, Fri.**
New Student Orientation	June 1, Fri.
Advisement and Registration	June 2, Sat.
Instruction begins; Late Registration fee applies	June 4, Mon.
Late Registration closes; last day for additions to programs	June 8, Fri., 5 p.m.
End of Second Week; $5 Change of Program Fee applies	June 15, Fri., 5 p.m.
Independence Day, holiday	July 4, Wed.
End of Sixth Week; last day for withdrawal from course without grade	July 13, Fri., 5 p.m.
Session ends	July 27, Fri., 10 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

(as used at this University)

ACADEMIC YEAR . . . the period which includes the Summer Session (beginning in June), Semester I (late August through late December), and Semester II (mid-January through late May).

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 freshmen programs but is not a degree-granting college with the exception of the BUS degree program and certain 2-year Associate degrees. The degree colleges or schools to which students may transfer, if eligible, after completion of the freshman year are: 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 2-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.

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 to 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. A registration period is held at the beginning of each semester and summer session. At that time, the student with the help of his adviser chooses a program of courses for the session and fills in forms necessary for proper recording of his enrollment.

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 BRUCE KING, Governor of New Mexico, ex officio ..... Santa Fe

LEONARD J. DeLAYO, State Superintendent of Public Instruction, ex officio ..... Santa Fe

CALVIN HORN, President ..... Albuquerque

WALTER F. WOLF, JR., Vice-President ..... Gallup

MRS. FRANK A. MAPEL, Secretary-Treasurer ..... Albuquerque

ARTURO G. ORTEGA ..... Albuquerque

AUSTIN E. ROBERTS ..... Farmington

*As of December, 1971.

ADMINISTRATIVE OFFICES AND OFFICERS, 1971-72

FERREL HEADY, Ph.D. ..... President
THEODORE MARTINEZ, B.A. ..... Assistant to the President

INSTITUTIONAL RESEARCH

MORRIS S. HENDRICKSON, Ph.D. ..... Director
THOMAS M. RAWSON, M.S. ..... Assistant Director

INTERCOLLEGIATE ATHLETICS

PAUL EDWARD McDAVID, M.S. ..... Director of Athletics
JOHN P. DOLZADELLI, B.S. ..... Assistant Director of Athletics
ROBERT J. DoBELL, B.S. ..... Business Manager of Athletics
IKE SINGER, JR. ..... Athletic Coordinator

SECRETARY'S OFFICE

JOHN NICOLL DURRIE, B.A. ..... Secretary of the University

SHERMAN EVERETT SMITH, Ph.D. ..... Vice President for Administration and Development
ROBERT GENE LALICKER, M.A. ..... Assistant to the Vice President for Administration and Development

ALUMNI OFFICE

GWINN HENRY ..... Director of Alumni Relations
NOOLEY R. REINHEARDT ..... Editor of Alumni Publications

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. ..... Planner
ROBERT J. SCHMIDT, M.S. ..... Project Engineer

COMPUTING CENTER

STOUGHTON BELL II, Ph.D. ..... Director

DEVELOPMENT OFFICE

U. WILLIAM WEEKS, M.S. ..... Director of Development

POPEJOY HALL

WILLIAM J. MARTIN, M.F.A. ..... Director
WALTER GEORG SCHREIBER, M.F.A. ..... Technical Director

PUBLIC INFORMATION OFFICE

JESS E. PRICE, B.A. ..... Director
EDWARD J. GROTH, M.A. ..... Assistant Director, Director of Sports Publicity
GARRY KLEIN, M.A. ..... Manager of News Bureau
RICHARD P. MELESKI ..... Director of Photo Services
ROBERT H. LAWRENCE ..... Publications Manager
WILLIAM RODNEY GEER, B.A. ..... Radio-TV-Film Manager
JEAN BOSL ..... Manager, Speakers Bureau

STATION KNME-TV

F. CLAUDE HEMPEN, Ph.D. ..... Director of Television, Station Manager

---

CHESTER COLEMAN TRAVELSTEAD, Ph.D. ..... Vice President for Academic Affairs
HERSHEY JULIEN, Ph.D. ..... Administrative Assistant to the Vice President for Academic Affairs

COLLEGE OF ARTS AND SCIENCES

NATHANIEL WOLLMAN, Ph.D. ..... Dean
HOWARD J. DITTMER, Ph.D. ..... Associate Dean
RALPH D. NORMAN, Ph.D. ..... Associate Dean
[2] ROBERT C. JESPERSEN, Ph.D. ..... Assistant Dean
MARSHALL R. NASON, Ph.D. ..... Director, Latin American Center
ROBERT D. HERRON, Ph.D. ..... Resident Director, Andean Study and Research Center
NELSON DÁVILA VILLAGOMEZ, Lic. en Derecho Int. ..... Associate Director

SCHOOL OF BUSINESS AND ADMINISTRATIVE SCIENCES

ROBERT RICHARD REHDER, Ph.D. ..... Dean

COLLEGE OF EDUCATION

RICHARD ELMER LAWRENCE, Ed.D. ..... Dean
RICHARD L. HOLEMON, Ed.D. ..... Associate Dean
[19] FRANK ANGEL JR., Ph.D. ..... Assistant Dean for International Programs
PAUL E. RESTA, Ph.D. ..... Assistant Dean for Special Projects
JOHN ANTHONY ARAGON, Ed.D. .. Director, Minority Groups Cultural Awareness Center

COLLEGE OF ENGINEERING

RICHARD CHARLES DOVE, Ph.D. ..... Dean
[2] CHARLES THERON GRACE, M.S.M.E. ..... Assistant Dean
THOMAS TELISPHORE CASTONGUAY, Ph.D. ..... Director of Industrial Relations
KARL THOMAS FELDMAN, Ph.D. ..... Director, Cooperative Education Program

COLLEGE OF FINE ARTS

CLINTON ADAMS, M.A. ..... Dean
DONALD CHRISTOPHER McRAE, M.A. ..... Associate Dean

UNIVERSITY COLLEGE

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E. BRUCE POTTER, Ph.D. ..... Assistant Dean
JAMES C. MOORE, Ph.D. ..... Director of Testing

GRADUATE SCHOOL

[39] GEORGE PETER SPRINGER, Ph.D. ..... Dean
DAVID THEODORE BENEDETTI, Ph.D. ..... Associate Dean; Acting Dean[40]
WAYNE PAUL MOELLENBERG, Ed.D. ..... Associate Dean
CHARLES LEROY BECKEL, Ph.D. ..... Assistant Dean
RALPH DOUGLAS O'DELL, Ph.D. . Director, Graduate Division, Los Alamos Residence Center
EDMUND B. KASNER, B.A. ..... Director, Research and Fellowship Services

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HUNTER LEE GEER, J.D. ..... Assistant Dean
MYRON FINK, LL.M. ..... Law Librarian
ROBERT L. BENNETT, LL.B. ..... Director, American Indian Law Center

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DARVEL LEE SUMNER, Lt. Col., U.S.A.F., M.S. ..... Commanding Officer
EDMUND PETER PALCO, Major, U.S.A.F., M.S. ..... Executive Officer

[2] On sabbatical leave first semester.
[19] Resigned 8/31/71.
[39] On sabbatical leave 3/13/72-8/1/72.
[40] 3/13/72-8/1/72.

BUREAU OF EDUCATIONAL PLANNING AND DEVELOPMENT

RICHARD FRANCIS TONIGAN, Ed.D. ..... Director; Director, School Plant Planning Service; Executive Director, New Mexico Research and Study Council

BUREAU OF ENGINEERING RESEARCH

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TONI TARLETON ..... Director, Harwood Foundation
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CHARLES BECKNELL, M.A. ..... Coordinator, Afro-American Studies
JOSE ANTONIO MONDRAGON, M.A.—Equivalent for Adm. .... Coordinator, Chicano Studies
RICHARD NATHANIEL WILSON, B.S. ..... Coordinator, Native American Studies

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NORRIS K. MAXWELL, M.L.S. ..... Readers' Services Librarian

INSTITUTE OF METEORITICS, DEPARTMENT OF GEOLOGY

KLAUS KEIL, Ph.D. ..... Director

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NEW MEXICO HISTORICAL REVIEW

ELEANOR BURNHAM ADAMS, B.A. ..... Editor

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SOUTHWESTERN JOURNAL OF ANTHROPOLOGY

HARRY WETHERALD BASEHART, Ph.D. ..... Editor

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ALONZO C. ATENCIO, Ph.D. .....Assistant Dean for Student Affairs
DIANE JENNINGS KLEPPER, M.D. .....Assistant Dean for Admissions and Student Affairs
ROBERT T. DIVETT, Ed.D. .....Librarian, Library of Medical Sciences
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---

[39] **GEORGE PETER SPRINGER, Ph.D.** .....Vice President for Research
CHARLES LEROY BECKEL, Ph.D. .....Acting Vice President for Research[40]

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[41] **JACK M. CAMPBELL, J.D., LL.D., D.Sc.Ed.** .....Director
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CHARLES LEROY BECKEL, Ph.D. .....Acting Director[41]
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LEE BERKEY ZINK, Ph.D. .....Director, Bureau of Business Research
EDWIN H. CAPLAN, Ph.D. .....Director, Bureau of Revenue Training Program
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ELMER ARTHUR SCHOLER, Ph.D. .....Director, Center for Leisure and Recreation
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HELEN WHITESIDE, Ed.D. .....Education Associate
JOHN S. BAKAS, B.A. .....Coordinator of Orientation and Advisement

[41] Resigned 12/31/71.
[39] On sabbatical leave 3/13/72-8/1/72.
[40] 3/13/72-8/1/72.
[41] 3/13/72 until appointment of new director.

ADMISSIONS AND RECORDS OFFICE

J.C. MacGREGOR, B.A. ..... Dean of Admissions and Records
ROBERT M. WEAVER, M.A. ..... Registrar
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WILLIAM L. WALTER, B.A. ..... Assistant Registrar

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THEODORE MARTINEZ, B.A. ..... Director[43]
BETTY G. NEHER ..... Assistant Director

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JAMES M. PALMER, B.S. ..... Assistant Director

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DENNIS M. JACKSON, M.D. ..... University Physician
EFFIE E. G. MEDFORD, M.D. ..... University Physician

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CHARLES PAUL ROBERTS, M.S. ..... Associate Dean of Students
KAREN ABRAHAM, M.A. ..... Assistant Dean of Students (Student Activities)
RICHARD CHARLES FOSCO, M.Ed. ..... Assistant Dean of Students
M. OLGA GANDARA, B.S. ..... Assistant Dean of Students
MICHAEL MYRON HENRY, M.A. ..... Assistant Dean of Students
LANNY STEPHEN ROMINGER, B.B.A. ..... Assistant Dean of Students
LINDA ELLEN FRIEDMAN, M.A. ..... Assistant Dean of Students (Housing)
CARROLL LEE HALL, M.A. ..... Assistant Dean of Students (Housing)
MARY MORELL, M.A. ..... Assistant Dean of Students (Housing)

JOHN PEROVICH, M.B.A. ..... Vice President for Business and Finance

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ROBERT A. SCHULTE, B.B.A. ..... Assistant Director, Housing
JACK A. CAIRNS ..... Director of Campus Security
RICHARD McGUIRE, B.S. in Ed. ..... Director of Golf Courses

[37] Retired 4/1/72.
[42] 7/1/71-1/31/72.
[43] Starting 4/1/72.

EDWIN JAMES SCHODORF ..... Director, Printing Plant
[88] HARLAND EDWIN SYMMONDS ..... Director, Food Services

BUDGET OFFICE

STEPHEN HENRY VAN HAUEN, JR. ..... Budget Director

OFFICE OF THE COMPTROLLER

CARROLL J. LEE, B.B.A., C.P.A. ..... Comptroller
ELEANOR L. MANSON, B.A. ..... Assistant Comptroller for Administrative Services
EUGENE H. BERGMAN, B.B.A. ..... Assistant Comptroller for General Accounting
JAMES A. WIEGMANN, B.S. ..... Assistant Comptroller for Contract and Grant Accounting
JOHN R. EARNSHAW, B.S., C.P.A. ..... Assistant Comptroller for Auditing and Accounting Systems
ARTHUR D. DIMMITT ..... Assistant Comptroller for Medical School Accounting
FRANK D. MANFREDI, B.B.A. ..... Purchasing Agent

DATA PROCESSING CENTER

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JOSEPH DONALD BROOKS ..... Associate Director
ALFRED L. V. INGRAM, SR., M.A. ..... Assistant Director for Administrative Systems
BRYAN W. DERSHEM ..... Assistant Director for Data Services
BARRY J. BARNES, B.A. ..... Assistant Director for Information Systems
DORIS B. WAKELAND, B.S. ..... Assistant Director for Institutional Studies
WILLIAM R. DARLING, M.S. ..... Assistant Director for Management Systems

PERSONNEL

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RENEE M. MASON ..... Employment Manager
RAY SANDERS BARNARD ..... Compensation Manager
WALTER B. LEWIS ..... Campus Safety Coordinator
ROMEO ORTIZ, B.A. ..... Personnel Manager, School of Medicine
BERNIE S. SANCHEZ, B.B.A. ..... Training Manager

PHYSICAL PLANT DEPARTMENT

MYRON FICKAS FIFIELD, B.S. in C.E. ..... Director
FLOYD B. WILLIAMS, JR., B.S. in C.E. ..... Manager, Construction and Maintenance Division
PATRICK ROMERO, B.A. ..... Manager, Custodian Division
HYMAN S. ADLER ..... Manager, Services and Medical Plant Division
ROBERT O. BURKE, B.S. in M.E. ..... Manager, Utilities Division

[88] Deceased 1/24/72.

EMERITI, 1971-72

NINA McGINNIES ANCONA, B.S., M.A., University of New Mexico. Associate Professor Emeritus of Music.

ARTHUR PAUL BAILEY, B.S., James Millikin University; M.S., Iowa State University. Professor Emeritus of Mechanical Engineering.

GEORGE LeROY BAKER, Ph.C., B.S., University of Colorado; M.S., University of Florida; Ph.D., Purdue University. Professor Emeritus of Pharmacy.

WILLIS LEE BARNES, Assistant Professor Emeritus of Health, Physical Education, and Recreation.

GLENN E. BLOOM, Superintendent Emeritus of the Printing Plant.

EARL BOWDICH, Superintendent Emeritus of the Department of Buildings and Grounds.

JOHN G. BREILAND, B.A., Luther College; M.S., State University of Iowa; Ph.D., University of California at Los Angeles. Professor Emeritus of Physics.

EDWARD FRANKLIN CASTETTER, B.S., Lebanon Valley College; M.S., Pennsylvania State College; Ph.D., Iowa State University. Academic Vice President Emeritus, Dean Emeritus of the Graduate School, Professor Emeritus of Biology.

LENA CECILE CLAUVE, B.A., University of New Mexico; M.A., Teachers College, Columbia University. Dean Emeritus of Women, Professor Emeritus of Music Education.

DOROTHY IRENE CLINE, B.A., University of Michigan; M.A., University of Chicago. Professor Emeritus of Political Science.

WILLIAM FREDERICK JEKEL DeJONGH, B.A., M.A., University of Michigan; M.A., Ph.D., Harvard University. Professor Emeritus of Modern Languages.

[28] **RALPH WADDELL DOUGLASS,** B.A., D.F.A., Monmouth College; Art Institute of Chicago; Julian's Academy (Paris); Art Students' League of New York. Professor Emeritus of Art.

ROBERT MANLY DUNCAN, B.A., M.A., Oberlin College; Ph.D., University of Wisconsin. Professor Emeritus of Modern Languages.

[29] **FLORENCE HAWLEY ELLIS,** B.A., M.A., University of Arizona; Ph.D., University of Chicago. Professor Emeritus of Anthropology.

HELEN HEACOCK ELLIS, B.A., M.A., University of New Mexico; M.S.W., University of Chicago. Associate Professor Emeritus of Sociology.

JAMES LAWTON ELLIS, B.S. in E.E., M.S. in E.E., Georgia School of Technology. Professor Emeritus of Electrical Engineering.

GRACE LONG ELSER, B.Ped., New Mexico Highlands University; B.S., Kansas State College; M.S., Cornell University. Associate Professor Emeritus of Home Economics.

MARSHALL ELMER FARRIS, B.S. in M.E., Purdue University; M.S. in M.E., University of Texas. Dean Emeritus of the College of Engineering, Professor Emeritus of Mechanical Engineering.

G. WARD FENLEY, A.B., M.A., Baylor University; Ph.D., University of North Carolina. Director Emeritus of Public Information.

EVERETT HAYES FIXLEY, B.S. in Ed., University of Kansas; Ed.M., Ed.D., Harvard University. Professor Emeritus of School Administration.

MARTIN WILLIAM FLECK, B.S., M.S., University of New Mexico; Ph.D., University of Colorado. Professor Emeritus of Biology.

ETHEL ARNOLD FLEMING, B.A., University of Nebraska; M.A., Colorado State College. Assistant Professor Emeritus of English.

ALBERT DUANE FORD, B.S. in M.E., M.S. in M.E., Montana State College. Professor Emeritus of Mechanical Engineering.

RAYMOND JOHN FOSS, B.S.C.E., South Dakota School of Mines and Technology. Professor Emeritus of Civil Engineering.

FRANK C. GENTRY, B.A., M.A., University of Oklahoma; Ph.D., University of Illinois. Professor Emeritus of Mathematics.

THERESA WITHERSTINE GILLETT, B.A., Rockford College; B.S. in L.S., M.A., University of Illinois. Chief Cataloger Emeritus, University Library.

EVA ISRAEL GLAESE, B.A., University of New Mexico; M.A., Syracuse University. Assistant Professor Emeritus of Business Administration.

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[28] Deceased 5/29/71.
[29] Retired end of Semester I.

MERCEDES GUGISBERG, B.S., M.S., Universiy of Minnesota. Professor Emeritus of Physical Education.

J. E. JACKSON HARRIS, M.D., Yale University. Director Emeritus of the University Health Service, Associate Professor Emeritus of Physical Education and Health.

HELEN HEFLING, B.S., Kansas State Teachers College at Emporia; B.S. in L.S., University of Illinois. Associate University Librarian Emeritus.

WILLARD WILLIAMS HILL, B.A., University of California; Ph.D., Yale University. Professor Emeritus of Anthropology.

ROY WILLIAM JOHNSON, B.A., University of Michigan; Certificat, Université de Poitiers, France. Professor Emeritus of Physical Education.

RAYMOND JONSON, Chicago Academy of Fine Arts; Art Institute of Chicago; Portland, Oregon, Art School. Professor Emeritus of Art.

CHARLES BURNETT JUDAH, B.A., M.A., Ph.D., University of Illinois. Professor Emeritus of Political Science.

JULIA MARY KELEHER, B.A., M.A., University of New Mexico. Associate Professor Emeritus of English.

VINCENT COOPER KELLEY, B.A., University of California at Los Angeles; M.S., Ph.D., California Institute of Technology. Professor Emeritus of Geology.

JAY CARROLL KNODE, B.A., M.A., University of Nebraska; Ph.D., Columbia University. Dean Emeritus of the College of Arts and Sciences and of the General College, Professor Emeritus of Philosophy.

WILLIAM MARTIN KUNKEL, Kimball School of Music; formerly flute soloist with John Philip Sousa's Band. Assistant Professor Emeritus of Music.

LINCOLN LaPAZ, B.A., Fairmont College; M.A., Harvard University; Ph.D., University of Chicago. Professor Emeritus of Mathematics and Astronomy, Director Emeritus of the Institute of Meteoritics.

ALBERT RICHARD LOPES, B.A., M.A., Ph.D., University of California. Professor Emeritus of Modern Languages.

ERNEST LYNNE MARTIN, B.S., New Mexico Western University; M.A., Ph.D., Indiana University. Professor Emeritus of Chemistry.

ALEXANDER SIMEON MASLEY, B.S., University of Minnesota; M.A., Ed.D., Columbia University. Professor Emeritus of Art Education.

HOWARD VINCENT MATHANY, B.A., M.A., Washington State College. Dean Emeritus of Students.

LYNN BOAL MITCHELL, B.A., Ohio State University; M.A., Ph.D., Cornell University. Professor Emeritus of Classics.

STANLEY STEWART NEWMAN, Ph.B., M.A., University of Chicago; Ph.D., Yale University. Professor Emeritus of Anthropology.

STUART ALVORD NORTHROP, B.S., Ph.D., Yale University. Research Professor Emeritus of Geology.

LILLIAN SWENSON PANKRATZ, B.A., Colorado College; B.S., Simmons College; A.M.L.S., University of Michigan. Cataloger Emeritus, University Library.

THOMAS MATTHEWS PEARCE, B.A., University of Montana; M.A., Ph.D., University of Pittsburgh. Professor Emeritus of English.

GEORGE MAXWELL PETERSON, Ph.B., M.A., Ph.D., University of Chicago. Professor Emeritus of Psychology.

TOM L. POPEJOY, B.A., M.A., LL.D., University of New Mexico; LL.D., University of Arizona. President Emeritus.

GENEVIEVE REBECCA PORTERFIELD, Ph.B., University of Chicago; M.S., Columbia University. General Reference Librarian Emeritus, Associate Professor Emeritus of Librarianship.

KEEN RAFFERTY, B.A., University of New Mexico. Professor Emeritus of Journalism.

BESS CURRY REDMAN, B.A., University of New Mexico; B.Mus., Lamont School of Music. Assistant Professor Emeritus of Music.

JESSE TAYLOR REID, B.A., Howard Payne College; M.A., Baylor University; Ed.D., Teachers College, Columbia University. Professor Emeritus of Education.

WINIFRED REITER, B.A., M.A., University of New Mexico. Editor Emeritus, Alumni Office.

JOHN DONALD ROBB, B.A., Yale University; Juilliard School of Music; American Conservatory at Fontainebleau; M.A., Mills College. Dean Emeritus of the College of Fine Arts, Professor Emeritus of Music.

JOSIAH COX RUSSELL, B.A., Earlham College; M.A., Ph.D., Harvard University. Professor Emeritus of History.

BENJAMIN SACKS, B.A., University of New Mexico; M.A., McGill University; Ph.D., Stanford University. Professor Emeritus of History.

FRANCE VINTON SCHOLES, B.A., M.A., Ph.D., Harvard University. Research Professor Emeritus of History.

VICTOR VIO SEARCY, B.S., M.S., Oklahoma State University. Instructor Emeritus in Chemistry.

RAMON JOSÉ SENDER, B.A., Instituto de Zaragoza; Lic. en Filosofia y Letras, Universidad Central de Madrid. Professor Emeritus of Modern Languages.

WILMA LOY SHELTON, B.A., B.L.S., University of Illinois. University Librarian Emeritus, Professor Emeritus of Library Science.

ELIZABETH PARKINSON SIMPSON, B.S., University of New Mexico; M.S., Iowa State University. Professor Emeritus of Home Economics.

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.

N. STANLEY STOUT, B.A., Northern State College (Aberdeen); M.A., University of Northern Colorado. Administrator Emeritus of Veterans Affairs.

RALPH WILVER TAPY, B.S. in E.E., Rose Polytechnic Institute; M.S. in E.E., University of Michigan. Professor Emeritus of Electrical Engineering.

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.

WILLIAM CHAUNCEY WAGNER, B.S. in C.E., South Dakota School of Mines; M.S. in C.E., Iowa State University. Professor Emeritus of Civil Engineering.

HAROLD LEROY WALKER, B.S., M.S., E.Met., Michigan College of Mining and Technology. Director Emeritus of Research and Fellowship Services, Professor Emeritus of Metallurgical Engineering.

PAUL A. F. WALTER, JR., B.A., Ph.D., Stanford University; M.A., University of New Mexico. Professor Emeritus of Sociology.

ARTHUR ALBERT WELLCK, B.A., Carleton College; M.A., University of Chicago; Ph.D., Columbia University. Director Emeritus of Counseling and Testing.

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.

* Deceased

FACULTY

FOR THE ACADEMIC YEAR 1971-72

FERREL HEADY, A.B., A.M., Ph.D., Washington University. President of the University, Professor of Political Science.

WARD TERRY ABBOTT, B.S., U.S. Military Academy; C.E., M.C.E., Cornell University. Assistant Professor of Civil Engineering.

ROY NICHOLAS ABDALLA, B.F.A., M.A., University of New Mexico. Lecturer in Art (Part-time).

CLIFFORD ABE, B.A., College of Idaho; M.S., University of Utah; Ed.D., University of Arizona. Assistant Professor of Guidance.

THEODORE ABEL, B.A., University of Poznan (Poland); M.A., Ph.D., Columbia University. Visiting Professor of Sociology (Part-time).

NICHOLAS PANTALEON ABEYTA, B.S., College of St. Joseph; M.A., Ed. Spec., Ed.D., University of New Mexico. Associate Professor of Guidance and Special Education.

JANE ELDORA ABRAMS, B.S., M.S., Stout State University; M.F.A., Indiana University. Assistant Professor of Art.

JONATHAN ABRAMS, B.A., University of California (Berkeley); M.D., University of California (San Francisco). Assistant Professor of Medicine.

CAROLINA T. ACOSTA-GONZALES, Licenciado en Pedagogia, Universidad Nacional de Asuncion (Paraguay); Ed.M., Pennsylvania State University. Assistant Professor of Elementary Education.

[17] **ANDREW ACOYA,** B.Arch., University of New Mexico; M.Arch., Massachusetts Institute of Technology. Lecturer in Architecture (Part-time).

CLINTON ADAMS, B.Ed., M.A., University of California. Dean of the College of Fine Arts, Professor of Art, Director of the Tamarind Institute.

ELEANOR BURNHAM ADAMS, B.A., Radcliffe College. Editor of the **New Mexico Historical Review,** Research Associate Professor of History.

GARY WAYNE ADAMSON, B.S., M.S., Kansas State Teachers College; Ed.D., University of Kansas. Associate Professor of Guidance and Special Education; Assistant Chairman for Special Education, Department of Guidance and Special Education.

GABRIEL ADELEYE, B.A., University of Ghana; M.A., Ph.D., Princeton University. Visiting Instructor in History.

MAUREEN MARGARET AHERN, B.S., Wisconsin State University (Stevens Point); M.S., Purdue University. Clinical Supervisor and Lecturer in Speech Pathology, Department of Speech Communication.

HARJIT SINGH AHLUWALIA, M.S.C., University of Punjab, India; Ph.D., University of Gujarat, India. Associate Professor of Physics.

BOHUMIL ALBRECHT, C.E., Slovak Institute of Technology, Czechoslovakia; M.S., Ph.D., Columbia University. Professor of Mechanical Engineering.

HUBERT GRIGGS ALEXANDER, B.A., Pomona College; Ph.D., Yale University. Professor of Philosophy.

FRITZ SCHREYER ALLEN, B.Chem. University of Minnesota; M.S., Ph.D., University of Illinois. Assistant Professor of Chemistry.

RICHARD CRESHAW ALLEN, JR., B.S., Murray State University; M.A., University of Missouri; Ph.D., University of New Mexico. Assistant Professor of Mathematics.

SEYMOUR SAMUEL ALPERT, A.B., Ph.D., University of California (Berkeley). Associate Professor of Physics.

BARRY CHARLES AMES, B.A., M.A., Stanford University. Assistant Professor of Political Science, Assistant Director of the Division of Inter-American Affairs.

LAWRENCE DOUGLAS AMICK, B.A., M.D., University of Iowa. Professor of Neurology.

DIANA AMSDEN, B.A., University of New Mexico; M.El.Ed., Harvard University; M.A., University of Denver. Cataloger, Instructor in Librarianship.

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[17] Resigned 10/31/71.

RICHARD ALAN ANDERSON, B.A., Stanford University; M.U.P., University of Washington; Ph.D., Michigan State University. Associate Professor of Architecture; Director of the Center for Environmental Research and Development, Institute for Social Research and Development.

[9] **ROBERT EDWIN ANDERSON,** B.A., College of Wooster; M.D., Western Reserve Medical School. Professor of Pathology, Chairman of the Department of Pathology.

ROGER YATES ANDERSON, B.S., M.S., University of Arizona; Ph.D., Stanford University. Professor of Geology.

GORDON POWELL ANDREWS, B.Arch., California State Polytechnic College. Lecturer in Architecture[7] (Part-time).

[10] **FRANK ANGEL, JR.,** B.S., University of New Mexico; M.S., University of Wisconsin; Ph.D., University of California. Assistant Dean for International Programs, College of Education, Professor of Educational Foundations.

JOHN EUGENE ANTOINE, B.S., Beloit College; M.D., University of Chicago. Assistant Professor of Radiology.

ANTHONY CONSTANTINE ANTONIADES, B.S.,Arch., National Technical University (Athens); M.Arch., M.P., Columbia University. Visiting Lecturer in Architecture.

GARO ZAREH ANTREASIAN, B.F.A., John Herron School of Art. Professor of Art, Technical Director of the Tamarind Institute.

OTTO APPENZELLER, M.B., B.S., M.D., Sydney University; Ph.D., University of London. Professor of Neurology, Professor of Medicine.

JOHN ANTHONY ARAGON, B.A., Highlands University; M.A., Ed.D., University of New Mexico. Director, Cultural Awareness Center; Associate Professor of Educational Administration.

NATHANIEL BIBIAN ARCHULETA, B.A., Southern Colorado State College; M.A., University of New Mexico. Lecturer in Elementary Education.

[8] **GEORGE WARREN ARMS,** B.A., Princeton University; Ph.D., New York University. Professor of English.

[7] **SAMUEL JACKSON ARNOLD,** A.B., University of West Virginia; LL.B., LaSalle Extension University. Visiting Lecturer in Business and Administrative Sciences (Part-time).

[8] **LOIS DUNCAN ARQUETTE,** Lecturer in Journalism (Part-time).

ALONZO C. ATENCIO, B.A., M.S., Ph.D., University of Colorado. Assistant Professor of Biochemistry; Assistant Dean for Student Affairs, School of Medicine.

RUTH ANN ATKINSON, B.S., M.D., University of Arkansas. Adjunct Instructor in Neurology

HEMMING AXEL ATTERBOM, B.S., Royal Central Institute of Gymnastics (Sweden); M.S., University of New Mexico; Ph.D., University of Oregon. Assistant Professor of Physical Education.

KEITH F. AUGER, B.S., University of Wisconsin; M.Ed., Ed.D., University of Illinois. Associate Professor of Elementary Education.

JOSEPHINE ELIZABETH BACA, B.S. in Nursing, St. Louis University; M.P.H., University of Minnesota. Associate Professor of Nursing.

DAVID LAWRENCE BACHELOR, B.A., University of Illinois; M.A., Ph.D., University of Chicago. Educational Coordinator, ISRAD Child Development Program, Associate Professor of Educational Foundations.

ARCHIE JOHN BAHM, B.A., Albion College; M.A., Ph.D., University of Michigan. Professor of Philosophy.

[7] **JOHN LEE BAILEY,** B.A., University of New Mexico. Instructor in Art Education (Part-time).

THOMAS IRVING BAKER, B.S., Kent State University; M.S., Ohio State University; Ph.D., Western Reserve University. Assistant Professor of Microbiology.

WILLIAM ERNEST BAKER, B.S.M.E., Ph.D., University of Texas; M.S., University of New Mexico. Associate Professor of Mechanical Engineering.

[35] **WILLIAM JOHN BAKER,** B.S.Pharm., University of New Mexico; M.S., University of Southern California. Assistant Professor of Pharamacy (Radiopharmacy), Instructor in Radiology.

JOHN FRANCIS BANNON, A.B., A.M., Saint Louis University; Ph.D., University of California (Berkeley). Visiting Professor of History.

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[3] On sabbatical leave second semester.
[7] First semester only.
[8] Second semester only.
[9] On sabbatical leave 6/1-11/30/71.
[10] Resigned 8/31/71.
[35] Starting 1/1/72.

LYNN HART WRIGHT BANOWSKY, B.A., University of Texas; M.D., Tulane Medical School. Associate Professor of Surgery (Urology).

JAMES FRANCIS BARBOUR, B.A., Concordia Theological Seminary; M.A., Washington University; Ph.D., University of California (Los Angeles). Assistant Professor of English.

ROBERT LEE BARENBERG, B.S., Massachusetts Institute of Technology; M.D., Albany Medical College. Adjunct Assistant Professor of Physiology.

[23] **JAMES EDWARD BARNES,** B.S., Central Missouri State College; M.S., Ph.D., University of Kansas. Assistant Professor of Radiology (Medical Physics).

ELIZABETH MILES BARNETT, B.A., Grinnell College; M.A., University of Southern California. Paramedical Education Specialist, New Mexico Regional Medical Program; Assistant Professor of Neurology (Physiotherapy).

WALTER EUGENE BARNETT, B.A., Yale University; LL.B., University of Texas. Professor of Law.

ELINORE MAGEE BARRETT, B.A., M.A., Ph.D., University of California (Berkeley). Assistant Professor of Geography.

MARIANNE KUNST BARRETT, Abitur, University of Munich. Instructor in German (Part-time).

RICHARD ALLAN BARRETT, A.B., University of California at Los Angeles; M.A., Ph.D., University of Michigan. Assistant Professor of Anthropology.

[4] **PETER SAMUEL BARTH,** A.B., Columbia University; Ph.D., University of Michigan. Associate Professor of Economics.

JOHN DONNINGTON BARTLETT, B.S., M.D., University of Michigan. Adjunct Assistant Professor of Pharmacology.

[7] **KATHLEEN MARY BARUTH,** B.S., College of St. Teresa; M.S., Mankato State College. Instructor in Nursing (Part-time).

HARRY WETHERALD BASEHART, M.A., Ph.D., Harvard University. Professor of Anthropology, Editor of the **Southwestern Journal of Anthropology.**

JOHN MONTAYNE BATCHELLER, B.S., Potsdam Teachers College; M.A., Ed.M., Ph.D., University of South Carolina. Professor of Music.

ERNEST WARREN BAUGHMAN, B.A., Ball State Teachers College; M.A., University of Chicago; Ph.D., Indiana University. Professor of English.

WILLIAM ALLISON BAXLEY, B.S., M.D., Duke University. Associate Professor of Medicine.

JOHN W. BEAKLEY, B.A., Texas Technological College; M.A., University of Texas; Ph.D., University of Arizona. Associate Professor of Biology.

ELIZABETH MARIE BEAR, B.S., University of California (San Francisco); M.S., Wayne State University; C.N.M., Catholic Maternity Institute (Santa Fe). Associate Professor of Nursing.

[19] **LLOYD BECK,** B.Sc., M.Sc., Ph.D., University of Western Ontario. Professor of Pharmacology, Chairman of the Department of Pharmacology.

CHARLES LEROY BECKEL, B.S., University of Scranton; Ph.D., Johns Hopkins University. Assistant Dean of the Graduate School, Professor of Physics.

[7] **JAMES FRANK BECKLEY,** B.A., J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

CHARLES E. BECKNELL, B.S., M.A., University of Albuquerque. Coordinator of Afro-American Studies; Assistant Professor of Educational Foundations.

MARTHA HELEN BELL, B.A., M.A., Stanford University. Instructor in Modern and Classical Languages (German).

STOUGHTON BELL II, B.A., M.A., Ph.D., University of California. Director of the Computing Center, Professor of Mathematics and Computing Science.

ELLEN FORSYTH BELLINGHAM, B.A., Barnard College; B.S. in L.S., Columbia University. Fine Arts Librarian, Assistant Professor of Librarianship.

HAROLD BELLINGHAM, B.A., Hope College; B.S. in L.S., Columbia University. Cataloger, Assistant Professor of Librarianship.

[8] **RICARDO FRANCISCO BENAVIDES,** M.A., University of Chile; Ph.D., University of Barcelona. Visiting Professor of Modern and Classical Languages.

SHAUL BEN-DAVID, M.Sc., Hebrew University (Israel); Ph.D., Cornell University. Associate Professor of Economics.

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[4] On leave for the year.
[7] First semester only.
[8] Second semester only.
[19] Resigned 8/31/71.
[23] Starting 10/1/71.

DAVID THEODORE BENEDETTI, B.A., M.A., University of New Mexico; Ph.D., University of Colorado. Associate Dean of the Graduate School, Professor of Psychology.

IVEN VELTON BENNETT, B.A., Chico State College; M.A., University of Nebraska; Ph.D., Boston University. Professor of Geography.

ROBERT LaFOLLETTE BENNETT, LL.B., Southeastern University School of Law. Director of the American Indian Law Center, Lecturer in Law.

ETHEL CLAIRE BENSINGER, B.A., University of Evansville; M.A., Indiana University. Cataloger, Instructor in Librarianship.

DANIEL BRUCE BERCH, B.A., University of Michigan; M.A., Michigan State University; Ph.D., University of New Mexico. Assistant Professor of Educational Foundations.

JOSEPH STEVEN BERES, M.D., Indiana University. Assistant Director of the Student Health Service, Associate Professor of Health Education.

JOHN JOSEPH BERGEN, B.A., St. Bonaventure University; M.A., Cornell University; Ph.D., University of California (Los Angeles). Assistant Professor of Modern Languages.

LOUIS CHARLES BERNARDONI, B.A., University of Illinois; M.A., Ed.D., Arizona State University. Associate Professor of Guidance, Chairman of the Department of Guidance and Special Education.

JOSEPH McCALL BICKNELL, B.A., M.D., University of Michigan. Associate Professor of Neurology.

GARLAND DEE BILLS, B.A., Arlington State College; Ph.D., University of Texas. Assistant Professor of Modern and Classical Languages.

LEWIS R. BINFORD, B.S., Virginia Polytechnic Institute; B.A., University of North Carolina; M.A., Ph.D., University of Michigan. Associate Professor of Anthropology.

[22] **ANNE KOVACOVICH BINGAMAN,** A.B., LL.B., Stanford University. Assistant Professor of Law.

ROBERT GORDON BLACHLY, A.B., University of Denver; M.S., University of Missouri. Instructor in Psychiatry (Social Work); C.E.I. Coordinator, Mental Health Center.

WILLIAM CORMACK BLACK III, B.A., M.D., University of Colorado. Associate Professor of Pathology.

NADENE SIMON BLACKBURN, B.A., Eastern Washington College of Education; M.A., Northwestern University. Associate Professor of Dramatic Art.

PEGGY JANICE BLACKWELL, B.A., University of Wyoming; Ph.D., Texas Technological University. Assistant Professor of Educational Foundations.

JOSEPH ALFRED BLAKE, B.A., Florida Atlantic University; M.A., Northwestern University. Assistant Professor of Sociology.

WILLIAM RANDALL BLAKELEY, B.A., M.D., University of California at Los Angeles. Associate Professor of Surgery.

CARMAN ARTHUR BLISS, B.S., University of Alberta; M.S., Ph.D., Purdue University. Dean of the College of Pharmacy, Professor of Pharmacy (Pharmacognosy).

RONALD EUGENE BLOOD, B.A., M.A., San Jose State College; Ph.D., Claremont Graduate School. Associate Professor of Educational Administration, Chairman of the Department of Educational Administration; Acting Director of Latin American Projects, College of Education.

JULIUS RUBIN BLUM, A.B., Ph.D., University of California. Professor of Mathematics.

ARTHUR A. BLUMENFELD, B.B.A., M.A., University of New Mexico. Associate Director of the Institute for Social Research and Development, Assistant Professor of Business and Administrative Sciences.

LEWELLYN BOATWRIGHT, JR., B.S., Clemson Agricultural College; M.S., Ph.D., University of Illinois. Associate Professor of Electrical Engineering and Computer Science.

JACQUELYN ANNE BOAZ, B.S.Ed., Northern Arizona University; M.A., Colorado State College; Ph.D., University of Minnesota. Assistant Professor of Recreation.

HAROLD LEWIS BOBER, B.Sc.Phm., University of Manitoba; M.S., University of Colorado. Instructor in Pharmacy (Pharmacy Administration).

[4] **PHILIP KARL BOCK,** B.A., Fresno State College; M.A., University of Chicago; Ph.D., Harvard University. Professor of Anthropology.

[7] **MICHAEL ALLEN BOGAN,** B.S., Baker University; M.S., Fort Hays Kansas State College. Instructor in Biology (Part-time).

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[4] On leave for the year.

[7] First semester only.

[22] Starting second semester.

VICTOR WAYNE BOLIE, B.S., M.S., Ph.D., *Iowa State University;* B.A., *Coe College;* M.A., Stanford University; Professor of Electrical Engineering and Computer Science, Chairman of the Department of Electrical Engineering and Computer Science.

JAMES ROBERT BOLTON, B.A., B.F.A., M.A., University of New Mexico. Lecturer in Art (Part-time).

BEVERLY JEAN BOND, B.S., M.S., Kansas State College. Assistant Professor of Physical Education, Director of Women's Intramurals.

EUGENE THOMAS BONESKI, B.A., Seton Hall University; S.T.L., Catholic University of America. Lecturer in Obstetrics and Gynecology.

[3] **CLAUDE MARIE BOOK,** License, Doctorate, University of Paris; M.A., University of Texas. Associate Professor of Modern and Classical Languages.

[2] **ERNEST TRUETT BOOK,** B.A., Baylor University; Ph.D., University of ~~Texas~~ Paris. Associate Professor of Modern and Classical Languages.

JAMES SAMUEL BOOTH, B.A., *California* State College (Los Angeles); M.S., Ph.D., University of Southern California. Assistant Professor of Biology.

THOMAS ALLEN BORDEN, A.B., Earlham College; M.S., M.D., University of Chicago. Assistant Professor of Surgery (Urology).

[20] **GEORG BORGSTROM,** Doctor of Science, University of Lund, Sweden. Popejoy Visiting Professor.

[7] **WAYNE CLEVELAND BORING,** Instructor in Art Education (Part-time).

[4] **JOHN GERALD BORREGO,** B.Arch., University of California (Berkeley); M.Arch., Washington University; M.Arch., M. City Planning, Massachusetts Institute of Technology. Assistant Professor of Architecture.

PAULA ANNE BOTTOME, B.A., University of Illinois; M.A., Ph.D., University of New Mexico. Lecturer in General Studies (Part-time).

EARL WHITFIELD BOURNE, A.B., Westminster College; M.S., Ph.D., Oklahoma State University. Assistant Professor of Biology.

[3] **FRANCIS HARRY BOWEN,** B.M., University of Illinois. Associate Professor of Music.

GERALD JOSEPH BOYLE, B.S., Colorado College; M.A., University of New Mexico; Ph.D., Syracuse University. Professor of Economics.

MARTIN DANIEL BRADSHAW, B.S.E.E., M.S.E.E., University of Wichita; Ph.D., Carnegie Institute of Technology. Associate Professor of Electrical Engineering and Computer Science.

[7] **ELIZABETH HALL BRADY,** B.A., Carleton College; M.A., University of Chicago. Lecturer in Elementary Education.

[6] **LOUIS ALEXANDER BRANSFORD,** B.B.A., St. Michael's College; M.A., Ed.D., Colorado State College. Associate Professor of Special Education.

ZELLA ANNA BRAY, Diploma in Nursing, St. Anthony Hospital; B.S., M.S., Indiana University. Assistant Professor of Nursing.

T. DARRELL BRESHEARS, B.A., Adams State College; D.D.S., University of Kansas City. Instructor in Dental Programs (Part-time).

[6] **WILLIAM J. BRISK,** B.A., Brown University; LL.B., New York University; M.A., Ph.D., Johns Hopkins University. Assistant Professor of Political Science.

DEAN GUY BRODKEY, B.A., University of Chicago; B.S., Illinois Institute of Technology; M.A., University of Chicago; Ed.D., University of California. Director of English Tutorial Program, *University College; Assistant Professor of Elementary Education.*

JACOB JEROME BRODY, B.A., M.A., Ph.D., University of New Mexico. Curator, Maxwell Museum of Anthropology; Associate Professor of Anthropology.

BYRON GILLIAM BROGDON, B.S., M.D., University of Arkansas. Professor of Radiology, Chairman of the Department of Radiology, Assistant Dean for Hospital Affairs, School of Medicine.

[7] **NAN CISNEY BRONFEN,** B.A., University of Vermont; M.A., University of North Carolina. Instructor in German (Part-time).

DOUGLAS GRIDLEY BROOKINS, A.B., University of California at Berkeley; Ph.D., Massachusetts Institute of Technology. Professor of Geology.

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[2] On sabbatical leave first semester.
[3] On sabbatical leave second semester.
[4] On leave for the year.
[6] On leave second semester.
[7] First semester only.
[20] 1/24-3/3/72.

ELLEN HODGES BROW, B.A., University of California (Davis); M.A., San Jose State College; M.A., University of Wisconsin. Latin American Bibliographer, Instructor in Librarianship.

WILLIAM HOOKER BROW, B.A., University of California; M.A., Ibero-American Area Studies, M.A., Portuguese, University of Wisconsin. Instructor in Portuguese (Part-time).

[31] **JAMES ALBERT BROWDER,** B.A., M.D., University of Texas. Pediatrician, Programs for Children; Assistant Professor of Pediatrics.

GARY LAYNE BROWER, B.A., Drury College; M.A., Ph.D., University of Missouri. Associate Professor of Modern and Classical Languages.

CHESTER RAYMOND BROWN, B.S., M.S., Stout State College. Professor and Program Head of Industrial Education, Department of Secondary Education.

FRANKLIN LEE BROWN, JR., B.A., Southwestern University; M.S., Ph.D., Purdue University. Assistant Professor of Economics.

HAMILTON B. BROWN, M.D., Case Western Reserve University; M.P.H., Yale University. Assistant Professor of Community Medicine, Assistant Professor of Medicine.

ALFRED BRUNER, B.A., San Diego State College; Ph.D., Indiana University. Adjunct Associate Professor of Psychology.

DOMENIC ANTHONY BRUZZESE, B.S., Georgetown University; M.D., University of New Mexico. Instructor in Psychiatry.

HOWARD CARNES BRYANT, B.A., University of California; M.S., Ph.D., University of Michigan. Professor of Physics.

PETER KERR BUCHAN, B.A., University of Denver; M.F.A., Yale University. Assistant Professor of Dramatic Art.

EDITH BUCHANAN, B.A., Meredith College; Ph.D., Duke University. Professor of English.

JOHN GOODWIN BUCHANAN, B.A., Amherst College; M.D., George Washington University. Instructor in Psychiatry.

BAINBRIDGE BUNTING, B.S., University of Illinois; Ph.D., Harvard University. Professor of Art, Professor of Architecture.

[8] **JANIE M. BURCART,** B.A., University of Sussex; M.A., University of New Mexico. Instructor in Sociology (Part-time).

LLOYD ROBERT BURLEY, B.Ed., Duluth State Teachers College; M.A., Ph.D., State University of Iowa. Professor of Physical Education, Assistant Chairman for Physical Education, Department of Health, Physical Education, and Recreation.

MARTIN BURLINGAME, B.A., M.Ed., Willamette University; Ph.D., University of Chicago. Associate Professor of Educational Administration.

CAROL ANN BURTON, B.S.N., Villanova University; M.S.N., Catholic University of America. Instructor in Nursing.

DOLORES SMITH BUTT, B.A., M.A., Ph.D., University of New Mexico. Associate Professor of Speech Communication (Speech Pathology).

WILLIAM JACKSON BYATT, B.S., Guilford College; M.S., University of North Carolina; Ph.D., University of Alabama. Professor of Electrical Engineering and Computer Science.

DIANA FRANCES CALVERT, B.S., University of Oklahoma; Pharm.D., University of Southern California. Assistant Professor of Pharmacy (Clinical Pharmacy).

[31] **JACK M. CAMPBELL,** A.B., J.D., Washburn College; LL.D., College of Santa Fe; LL.D., New Mexico State University; LL.D., University of Albuquerque; Dr. of Scientific Education, New Mexico Institute of Mining and Technology. Director of ISRAD, Professor of Law (Part-time).

JOHN MARTIN CAMPBELL, B.A., University of Washington; Ph.D., Yale University. Professor of Anthropology, Chairman of the Department of Anthropology; Director of the Maxwell Museum of Anthropology.

ROBERT DALE CAMPBELL, B.A., M.A., University of Colorado; Ph.D., Clark University. Professor of Geography.

EDWIN H. CAPLAN, B.B.A., M.B.A., University of Michigan; Ph.D., University of California. Professor of Business and Administrative Sciences.

ALFRED SAMUEL CARASSO, B.Sc., University of Adelaide; M.Sc., M.A., Ph.D., University of Wisconsin. Assistant Professor of Mathematics.

JOSEPH PETER CARDILLO, A.B., Dartmouth College; Ph.D., George Peabody College. Instructor in Psychiatry (Psychology), Assistant Professor of Psychology.

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[8] Second semester only.

[31] Resigned 12/31/71.

JAMES F. CARLIN, B.S., De Pauw University; M.D., Western Reserve University. Assistant Professor of Psychiatry.

JOHN BRYAN CARNEY, JR., B.S., M.C.E., University of Oklahoma; Ph.D., University of Arizona. Associate Professor of Civil Engineering.

JANET MARIE CARTE, B.S., University of Puget Sound. Lecturer in Neurology.

[20] **JOSE MIGUEL CASTILLO**, B.S., B.A., Escuelas Pias (Zaragoza, Spain); M.D., Zaragoza University Medical School. Assistant Professor of Psychiatry.

ROBERT FOSTER CASTLE, A.B., M.D., Western Reserve University. Professor of Pediatrics.

WILMA KRAUSE CASTLE, A.B., M.D., Western Reserve University. Assistant Professor of Pediatrics.

THOMAS TELISPHORE CASTONGUAY, B.Met.Engr., University of Detroit; Ph.D., Iowa State University. Professor of Chemical Engineering; Director of Industrial Relations, College of Engineering.

[5] **LARUE SCOTT CATLETT**, B.A., M.A., University of Texas; Ph.D., University of Wisconsin. Assistant Professor of English.

ROY DUDLEY CATON, JR., B.S., M.A., Fresno State College; Ph.D., Oregon State University. Associate Professor of Chemistry.

COLSTON CHANDLER, Sc.B., Brown University; Ph.D., University of California (Berkeley). Assistant Professor of Physics.

PAT R. CHANDLER, B.S., M.S., Eastern New Mexico University. Instructor in Curriculum and Instruction, College of Education (Part-time).

[20] **MARVIN LAWRENCE CHATKOFF**, B.A., University of Oklahoma; M.S., University of Southern California; Ph.D., University of New Mexico. Coordinator of the Estancia Project, School of Medicine; Assistant Professor of Community Medicine.

ALEX JOSEPH CHAVEZ, B.Mus., M.Mus., University of Colorado. Assistant Professor of Music.

DAN D. CHAVEZ, B.S.Educ., M.A., University of New Mexico; Ph.D., University of Michigan. Director of the College Enrichment Program (ISRAD), Assistant Professor of Educational Foundations.

FREDERICK MARTIN CHREIST, SR., B.A., DePauw University; M.A., Ph.D., Northwestern University. Professor of Speech Communication (Speech Pathology).

KARL CHRISTMAN, B.S., M.B.A., Indiana University; C.P.A. Associate Professor of Business and Administrative Sciences, Consultant to the Tamarind Institute.

PHAM CHUNG, License en Droit, University of Saigon; M.A., Ph.D., University of Pennsylvania. Associate Professor of Economics.

ALBERT MARION CHURCH III, A.B., Colorado College; Ph.D., Claremont Graduate School. Assistant Professor of Economics.

[7] **ARTHUR JOSEPH CLARK, JR.**, B.S.M.E., Cornell University; M.S.M.E., Polytechnic Institute of Brooklyn; M.S.E.E., University of New Mexico. Adjunct Professor of Mechanical Engineering.

GEORGE RICHMOND CLARK, B.A., Cornell University; M.S., Ph.D., California Institute of Technology. Assistant Professor of Geology.

WOODROW WILSON CLEMENTS, B.A., New Mexico Highlands University; M.A., University of New Mexico. Professor of Physical Education; Assistant Chairman for Basic Instruction, Department of Health, Physical Education, and Recreation.

DANIEL EMMETT CLIFFORD, D.D.S., Creighton University. Acting Director of Dental Programs; Instructor in Dental Programs (Part-time).

RICHARD HUDSON CLOUGH, B.S., University of New Mexico; M.S., University of Colorado; Sc.D., Massachusetts Institute of Technology. Professor of Civil Engineering.

RUBEN COBOS, B.A., M.A., University of New Mexico. Associate Professor of Modern and Classical Languages.

GLENN FRANK COCHRANE, JR., B.S., Oklahoma State University; M.S., Kansas State University; Ph.D., Oregon State University. Assistant Professor of Mechanical Engineering.

RONALD WARNER COEN, B.A., Northwestern University; M.D., Ohio State University. Assistant Professor of Pediatrics.

ROBERT FRANCIS COGBURN, A.B., Ph.D., University of California (Berkeley). Associate Professor of Mathematics.

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[5] On leave first semester.

[7] First semester only.

[20] Resigned 9/30/71.

SANFORD COHEN, B.A., M.A., Ph.D., Ohio State University. Professor of Economics, Chairman of the Department of Economics.

FREDERICK COHN, B.S., Franklin Marshall College; M.D., University of Pennsylvania. Adjunct Assistant Professor of Health Education.

[4] **VAN DEREN COKE,** B.A., University of Kentucky; M.F.A., Indiana University. Professor of Art.

ROY ARTHUR COLCLASER, B.E.E., University of Cincinnati; M.S.E.E., Carnegie Institute of Technology; Ph.D., University of New Mexico. Assistant Professor of Electrical Engineering and Computer Science.

[7] **DAVID MARTIN COLE,** B.Mus., M.Mus., University of New Mexico; Lecturer in Music (Part-time).

[7] **MARY CHRISTINE COLEMAN,** B.S., University of South Dakota. Instructor in Elementary Education (Part-time).

WILLIAM FLETCHER COLEMAN, B.S., Florida Presbyterian College; Ph.D., Indiana University. Assistant Professor of Chemistry.

LEROY CONDIE, B.A., Brigham Young University; M.S., New York University; Ph.D., University of New Mexico. Professor of Elementary Education.

JOHN TEHERANCE CONWAY, B.F.A., Herron School of Art; M.A., University of New Mexico. Assistant Professor of Art.

[7] **JOHN RICHARDSON COONEY,** B.A., J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

JAMES ARLIN COOPER, B.S.E.E., M.S.E.E., University of New Mexico; Ph.D., Stanford University. Adjunct Professor of Electrical Engineering and Computer Science.

JAMES GORDON COOPER, B.S., University of Maine; M.A., Ed.D., Stanford University. Professor of Educational Foundations.

DON E. CORBIN, Adjunct Instructor in Physical Education.

JOSEPH THOMAS CORDARO, JR., B.S., M.S., Ph.D., University of Texas. Assistant Professor of Electrical Engineering and Computer Science.

LINDA SEINFELD CORDELL, B.A., George Washington University; M.A., University of Oregon. Assistant Professor of Anthropology.

[7] **CHRISTOPHER DAVID CORDES,** B.A., M.F.A., University of California. Lecturer in Art (Part-time).

IGNACIO RUBEN CORDOVA, B.S., M.A., Ed.D., University of New Mexico. Assistant Professor of Educational Administration.

CARL ERNEST CORDS, B.S., Arizona State University; Ph.D., University of Washington. Assistant Professor of Microbiology.

MARION MARVIN COTTRELL, B.S., M.S., University of New Mexico. Associate Professor of Civil Engineering.

BARBARA DUNLAP COX, A.B., University of California (Berkeley); M.S., Simmons College Graduate School of Library Science, Instructor in Librarianship; Assistant Social Science Librarian.

KENNETH EDWARD COX, B.Sc., Imperial College of Science and Technology, London; M.A.Sc., University of British Columbia; Ph.D., Montana State University. Associate Professor of Chemical Engineering.

BONNER MILTON CRAWFORD, B.A., Central Michigan University; M.A., Ph.D., University of Michigan. Professor of Secondary Education.

CLIFFORD SMEED CRAWFORD, B.A., Whitman College; M.S., Ph.D., Washington State University. Associate Professor of Biology.

VIRGINIA POINDEXTER CRENSHAW, B.A.B.E., Columbia Bible College; B.S.N., Vanderbilt University; M.P.H., University of North Carolina; Ed.D., George Peabody College for Teachers. Professor of Nursing.

RICHARD JOHN CRONIN, B.A., Fordham University; M.D., Georgetown University. Assistant Professor of Medicine.

JAMES PETTIT CROW, B.A., University of New Mexico; M.A., Stanford University. Assistant Professor of Journalism.

EDGAR FRANK CRUFT, B.S., Durham University, England; Ph.D., McMaster University, Canada. Associate Professor of Geology.

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[4] On leave for the year.

[7] First semester only.

RANDAL L. CRUIKSHANKS, B.A., University of California (Berkeley); M.A., Ph.D., University of Oregon. Assistant Professor of Political Science.

ATTILA PAL CSANYI, B.Sc., M.Sc., University of Pittsburgh. Instructor in Educational Foundations (Part-time).

CHARLES EDWARD CULLEN, D.D.S., Marquette University. Lecturer in Dental Programs (Part-time).

GERALD EUGENE CUNICO, B.S., M.A., University of New Mexico. Assistant Professor of Industrial Education, Department of Secondary Education.

ALLIS STEVENSON CURRAN, B.A., University of Iowa; M.S.S., Smith College. Adjunct Instructor in Psychiatry (Social Work).

[7] **EDWARD THOMAS CURRAN,** B.S., North Texas State University; J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

WILLIAM S. CURRAN, A.B., M.D., Harvard University. Adjunct Assistant Professor of Medicine.

ALICE HUSTON CUSHING, B.S., University of New Mexico; M.D., University of Colorado School of Medicine. *Associate Professor of Pediatrics.*

[4] **DONALD COLGETT CUTTER,** B.A., M.A., Ph.D., University of California. Professor of History.

WILLIAM MINOR DABNEY, B.A., M.A., Ph.D., University of Virginia. Professor of History.

LEWIS ALOYSIUS DAHMEN, B.S., Wisconsin State College; M.S., Northern Illinois University; Ed.D., Arizona State University. Director of the Pupil Personnel Services Project, Associate Professor of Educational Foundations.

[27] **WILLIAM GLENN DAIL, JR.,** B.S., Carson-Newman College; M.A., Appalachian State University; Ph.D., Virginia Commonwealth University. Instructor in Anatomy.

WILLIAM PATRICK DALEY, B.A., Massachusetts College of Art; M.F.A., Columbia University. *Visiting Professor of Art.*

[8] **JOSEPH DANCLOVIC,** B.S., Northeast Missouri State College; M.B.A., Southern Methodist University. Visiting Lecturer in Business and Administrative Sciences (Part-time).

CHARLES WESLEY DANIELS, B.F.A., University of Arizona; J.D., University of New Mexico. Visiting Assistant Professor of Law.

IDA EDWINA DANIELS, B.S., Lincoln Memorial University; M.S., Kearney State College. Instructor in Physical Education.

DAVID WAYNE DARLING, B.S., M.S., Western New Mexico University; Ed.D., University of Texas. Professor of Elementary Education, Chairman of the Department of Elementary Education.

FRED MORTON DART, B.M., University of Michigan; M.A., University of Maryland. Associate Professor of Music.

RICHARD EMMETT DASCHER, B.S., Washington University; M.S., Ph.D., University of Houston. Assistant Professor of Chemical Engineering.

DANIEL PETER DATO, B.S., Rutgers University; M.A., Middlebury College; Ph.D., Cornell University. Visiting Associate Professor of Secondary Education.

GUIDO H. DAUB, B.S., M.S., Ph.D., University of Wisconsin. Professor of Chemistry, Chairman of the Department of Chemistry.

PEDRO RUBENS DAVID, LL.M., J.D., National University, Argentina; Ph.D., Indiana University. Visiting Professor of Sociology.

HERBERT THADDEUS DAVIS III, B.S., M.Sta., University of Florida; Ph.D., Johns Hopkins University. Assistant Professor in Mathematics.

[8] **JEFFREY ROBERT DAVIS,** B.E.E., M.S., Rensselaer Polytechnic Institute; Ph.D., Washington University. Associate Professor of Mathematics.

PAUL BENJAMIN DAVIS, B.A., Oberlin College; M.A., Ph.D., University of Wisconsin. Associate Professor of English, Director of Freshman English.

PHILIP WAYNE DAY, B.S., D.V.M., Oklahoma State University. Director of the Animal Resource Facility, School of Medicine; Assistant Professor of Pathology.

CHRISTOPHER DEAN, B.A., M.A., Ph.D., Harvard University. Professor of Physics.

LORRAINE MARIE DECK, B.S., Wayne State University; M.S., University of New Mexico. Instructor in Chemistry.

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[3] *On sabbatical leave second semester.*
[4] On leave for the year.
[7] First semester only.
[8] Second semester only.
[27] Starting 9/1/71.

WILLIAM GEORGE DEGENHARDT, A.B., Syracuse University; M.S., Northeastern University; Ph.D., Texas A and M University. Associate Professor of Biology.

JOANNA deKEYSER, B.M., University of Southern California. Assistant Professor of Music. ([7]Part-time).

PHILIP SAMUEL DELORIA, B.A., Yale University. Director of the Special Scholarship Program in Law for American Indians, Lecturer in Law.

RALPH ELGIN DeMARR, B.S., University of Idaho; M.A., Washington State University; Ph.D., University of Illinois. Associate Professor of Mathematics.

LEO STANLEY DEMSKI, B.A., Miami University; Ph.D., University of Rochester. Assistant Professor of Anatomy.

[4] **ROBERT JOHN DESIDERIO,** B.S., St. Joseph's College; J.D., Boston College. Associate Professor of Law.

[11] **AGAMEMNON DESPOPOULOS,** B.M., B.S., M.D., University of Minnesota. Professor of Physiology.

[7] **JERONE NELSON DEVERMAN,** B.S., M.S., Ph.D., Purdue University. Adjunct Professor of Electrical Engineering and Computer Science.

[12] **ARTHUR LEON DeVOLDER,** B.S., Indiana University; B.S. in L.S., University of Denver; M.A., University of New Mexico. Technical Services Librarian, Associate Professor of Librarianship.

RONALD CLIFFORD DeVRIES, B.S.E.E., Northwestern University; M.S., Ph.D., University of Arizona. Assistant Professor of Electrical Engineering and Computer Science.

SUSAN VERA DEWITT, B.A., Whitman College. Assistant Professor of English.

[31] **HUMBERTO DIAZ,** M.D., University of Neuvo Leon, Monterrey, Mexico. Assistant Professor of Psychiatry.

ROBERT CHRISTOPHER DICK, B.S., Kansas State Teachers College; M.A., University of New Mexico; Ph.D., Stanford University. Associate Professor of Speech Communication.

[3] **FRANKLIN MILLER DICKEY,** B.A, University of Wisconsin; Ph.D., University of California at Los Angeles. Professor of English.

LORAIN FREDERICK DIEHM, B.S., M.S., Kansas State Teachers College. Head Trainer, Athletics; Associate Professor of Physical Education.

BYRON DALE DIETERLE, B.S., Ph.D., University of California (Berkeley). Assistant Professor of Physics.

[36] **SCOTT EDWARD DIETERT,** B.A., Rice University; M.D., Washington University. Assistant Professor of Anatomy.

HOWARD J. DITTMER, B.A., M.A., University of New Mexico; Ph.D., State University of Iowa. Professor of Biology, Associate Dean of the College of Arts and Sciences.

ROBERT THOMAS DIVETT, B.S., Brigham Young University; M.A., George Peabody College for Teachers; Ed.D., University of Utah. Librarian of the Library of Medical Sciences, Associate Professor of Medical Bibliography.

JOVAN DJURIC, Elec. Engr., University of Belgrade; D.E.E., Serbian Academy of Sciences. Associate Professor of Electrical Engineering and Computer Science.

RAYMOND C. DOBERNECK, B.S., M.D., Marquette University; Ph.D., University of Minnesota. Professor of Surgery.

[7] **HENRY MORGAN DODD, JR.,** B.S., Ph.D., University of Kansas. Adjunct Professor of Mechanical Engineering.

RONALD HOWARD DOLKART, B.A., University of California at Los Angeles; M.A., University of California (Berkeley); Ph.D., University of California at Los Angeles. Assistant Professor of History.

[7] **ARLIE BURL DONALDSON,** B.S.Ch.E., New Mexico State University; M.S.Ch.E., University of Utah; Sc.D.M.E., New Mexico State University. Adjunct Professor of Mechanical Engineering.

[4] **JAMES ASHLEY DONALDSON,** A.B., Lincoln University; M.S., Ph.D., University of Illinois. Associate Professor of Mathematics.

WILLIAM EDWARD DOUGHTY, B.S., University of Wyoming; M.D., University of New Mexico. Instructor in Anatomy.

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[3] On sabbatical leave second semester.
[4] On leave for the year.
[7] First semester only.
[11] On leave 7/1-11/30/71.
[12] On sabbatical leave 1/1-6/30/72.
[31] Resigned 12/31/71.
[36] Resigned 4/30/72.

PHYLLIS DOUGLASS, G.N., R.N., St. Luke's Hospital (Chicago); B.S., St. Xavier College; M.S., New York University; Ed.D., Boston University. Associate Professor of Health Education.

RICHARD CHARLES DOVE, B.S. in M.E., M.S. in M.E., Ph.D., Iowa State University. Dean of the College of Engineering, Professor of Mechanical Engineering.

ROBERT JOHN DOXTATOR, B.Ed., M.Ed., University of Indiana; Ed.D., University of Colorado. Professor of Secondary Education, Chairman of the Department of Secondary Education.

DAVID JOE DRAPER, B.A., M.A., Ph.D., University of Kansas. Assistant Professor of Speech Communication (Speech Pathology), Coordinator of Clinical Services.

HAROLD DEAN DRUMMOND, B.A., M.A., Colorado State College; Ed.D., Stanford University. Professor of Elementary Education.

DONALD WARD DUBOIS, B.S. in M.E., M.A., Ph.D., University of Oklahoma. Professor of Mathematics.

MARIE-LOUISE duFAULT, B.S., Ed.M., Boston University. Assistant Professor of Dental Hygiene, Assistant to the Director of the Dental Programs.

MARCIA ELLEN DUNCAN, B.A., Washburn University of Topeka; M.L.S., Kansas State Teachers College. Government Publications Cataloger, Instructor in Librarianship.

DONALD WALTER DUSZYNSKI, B.S., Wisconsin State University; M.S., Ph.D., Colorado State University. Assistant Professor of Biology.

DELMAR ALBERT DYRESON, B.S., Texas A & I University; M.A., Arizona State University; Ph.D., University of Denver. Assistant Professor of Geography.

ROBERT PHILIP EATON, B.A., College of Wooster; M.D., University of Chicago Medical School. Associate Professor of Medicine.

MORRIS EMERY EAVES, B.A., Long Island University. Assistant Professor of English.

BETTY JEAN EBERLE, B.S., Oberlin College; Ph.D., Western Reserve University. Assistant Professor of Community Medicine.

RALPH LEMON EDGEL, B.A., University of Utah; M.B.A., Northwestern University. Professor of Business and Administrative Sciences.

ARTEMUS LINWOOD EDWARDS, Diploma, Curtis Institute of Music. Assistant Professor of Music.

WILLIAM STERLING EDWARDS, B.S., Virginia Military Institute; M.D., University of Pennsylvania. Professor of Surgery.

GUSTAVE EFROYMSON, A.B., A.M., Ph.D., Harvard University. Assistant Professor of Mathematics.

EWALD EHLY, B.A., Kearney State College; M.A., George Peabody College; D.M.A., University of Colorado. Assistant Professor of Music.

[4] **RONALD RALPH EICHORN,** B.S., University of Utah. Assistant Professor of Architecture.

BENNETT EISENBERG, A.B., Dartmouth College; Ph.D., Massachusetts Institute of Technology. Visiting Assistant Professor of Mathematics.

GEORGE EISENBERG, B.A., University of Illinois; M.D., University of Chicago. Assistant Professor of Pediatrics.

[32] **FLORENCE HAWLEY ELLIS,** B.A., M.A., University of Arizona; Ph.D., University of Chicago. Professor of Anthropology.

HENRY CARLTON ELLIS, B.S., College of William and Mary; M.A., Emory University; Ph.D., Washington University. Professor of Psychology.

RICHARD NATHANIEL ELLIS, B.A., M.A., Ph.D., University of Colorado. Associate Professor of History.

ROBERT M. ELLIS, B.A., Mexico City College; M.F.A., University of Southern California. Associate Professor of Art.

[3] **WILLIS HILL ELLIS,** A.B., Wabash College; J.D., Indiana University. Professor of Law.

JAMES AUBY ELLISON, B.S., M.S., University of Wisconsin; Ph.D., California Institute of Technology. Assistant Professor of Mathematics.

[1] **WOLFGANG EUGENE ELSTON,** B.S., City College of the City of New York; M.A., Ph.D., Columbia University. Professor of Geology.

ROGER CHARLES ENTRINGER, B.S., State University of Iowa; M.S., Ph.D., University of New Mexico. Associate Professor of Mathematics.

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[1] On sabbatical leave for year.
[3] On sabbatical leave second semester.
[4] On leave for the year.
[32] Retired end of Semester I.

[1] **BERNARD EPSTEIN,** B.A., M.S., New York University; Ph.D., Brown University. Professor of Mathematics.

AHMED ERTEZA, B.S., M.S., Calcutta University; M.S.E.E., Prof'l. Engr., Stanford University; Ph.D., Carnegie Institute of Technology. Professor of Electrical Engineering and Computer Science.

ROBERT RUIZ-ESPARZA, B.A., M.A., University of New Mexico. Assistant Professor of Secondary Education.

LINDA KAY ESTES, B.S., M.A., University of New Mexico. Instructor in Physical Education.

WAYNE C. EUBANK, B.S., West Texas State College; M.A., Northwestern University; Ph.D., Louisiana State University. Professor of Speech Communication, Chairman of the Department of Speech Communication.

JOHN WAINRIGHT EVANS, A.B., Swarthmore College; A.M., Ph.D., Harvard University; Sc.D., University of New Mexico. Adjunct Professor of Astronomy.

MELBOURNE GRIFFITH EVANS, B.A., Reed College; M.A., Ph.D., University of California. Professor of Philosophy.

JAMES SAMUEL EVERETT, B.S.E., M.A., Kansas State Teachers College. Assistant Professor of Special Education.

WILLIS LYNN EVERETT, B.S., M.S., Ph.D., University of Michigan. Associate Professor of Nuclear Engineering.

JOSEPH J. FASHING, B.A., M.A., University of California (Santa Barbara); Ph.D., University of Oregon. Assistant Professor of Sociology, Assistant Professor of Educational Foundations.

DENNIS MICHAEL FEENEY, B.S., Pennsylvania State University; M.A., Kent State University; Ph.D., University of California (Los Angeles). Assistant Professor of Psychology.

[8] **ROBERT FEINBAUM,** B.S., Massachusetts Institute of Technology; M.A., Ph.D., University of California at Berkeley. Visiting Assistant Professor of Sociology.

LEONARD FELBERG, B.Mus., M.Mus., Yale University. Associate Professor of Music.

KARL THOMAS FELDMAN, B.S.M.E., University of Kansas; M.S.M.E., Ph.D., University of Missouri. Associate Professor of Mechanical Engineering, Director of the Cooperative Education Program for the College of Engineering.

SANDRA LEE FERKETICH, B.A., University of New Mexico; M.S., Indiana University. Assistant Professor of Nursing.

MARY MARGARET FERNANDEZ, B.A., Aquinas College; M.A., University of New Mexico. Lecturer in Elementary Education.

PELAYO HIPOLITO FERNANDEZ, B.A., University of California; M.A., Wayne State University; Ph.D., Salamanca University, Spain. Associate Professor of Modern and Classical Languages.

[1] **DOUGLAS PETER FERRARO,** A.B., Columbia College; M.A., Ph.D., Columbia University. Associate Professor of Psychology.

WILLIAM CARL FIEDLER, B.S., M.S., Ph.D., Purdue University. Professor of Pharmacy.

JAMES SMITH FINDLEY, B.A., Western Reserve University; Ph.D., University of Kansas. Professor of Biology.

MYRON FINK, B.A., Cornell University; LL.B., LL.M., New York University Law School; M.S. in L.S., Columbia University. Law Librarian, Associate Professor of Law.

JAMES DANIEL FINLEY III, B.S., B.A., University of Texas; Ph.D., University of California (Berkeley). Assistant Professor of Physics.

HOWARD VIVIAN FINSTON, B.A., M.A., Ph.D., Stanford University. Professor of Business and Administrative Sciences.

RONALD PETER FISCHER, B.S., Ohio State University; M.D., University of Cincinnati. Assistant Professor of Community Medicine, Assistant Professor of Surgery.

WILLIAM ROBERT FISHBURN, B.S., University of Illinois; M.A., University of Missouri; Ed.D., University of Arizona. Associate Professor of Guidance.

[13] **REGINALD HEBER FITZ,** B.A., M.D., Harvard University. Professor of Medicine, Consultant to the New Mexico Regional Medical Program.

J. PAUL FITZSIMMONS, B.S., Ph.D., University of Washington. Professor of Geology.

[7] **MARION ROHOVEC FLECK,** B.S., University of New Mexico; M.S., Yale University; M.P.H., University of California; Ph.D., University of New Mexico. Adjunct Professor of Health Education.

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[1] On sabbatical leave for year.
[7] First semester only.
[8] Second semester only.
[13] On leave 10/1-12/31/71.

ROBERT EDWARD FLEMING, B.A., M.A., Northern Illinois University; Ph.D., University of Illinois. Associate Professor of English.

CHARLES RICHARD FLETCHER, B.A., M.A., University of Montana; Ph.D., Yale University. Associate Professor of Psychiatry (Behavioral Sciences).

MARILYN PENDLETON FLETCHER, B.S., Centenary College; M.S., Louisiana State University. Serials Librarian, Assistant Professor of Librarianship.

TROY SMITH FLOYD, B.J., M.A., University of Missouri; Ph.D., University of California. Associate Professor of History.

DONALD LEROY FOSTER, B.Mus., M.Mus., DePaul University; M.S.L.S., University of Illinois. Catalog Librarian, Assistant Professor of Librarianship.

DOUGLAS TYLER FRANCIS, B.A., Grinnell College; J.D., University of Chicago. Visiting Lecturer in Business & Administrative Sciences (Part-time).

ALAN FRANK, B.A., Columbia University; M.D., College of Physicians and Surgeons. Assistant Professor of Psychiatry.

KURT FREDERICK, Graduate of the State Academy of Music and State College of Music in Vienna; B.S., University of New Mexico; M.Mus., Ph.D., University of Rochester. Professor of Music.

[18] **HAROLD LEROY FREEDMAN,** B.S., M.D., University of Michigan. Adjunct Instructor in Psychiatry.

THOMAS PATRICK FRIDEN, A.B., Gonzaga University; M.A., Ph.D., University of Illinois. Assistant Professor of Psychology.

GENE FRUMKIN, B.A., University of California at Los Angeles. Associate Professor of English.

WILLIAM ROGERS GAFFORD, B.S., University of New Mexico; M.S., University of Texas. Professor of Civil Engineering.

F. CHRIS GARCIA, B.A., M.A., University of New Mexico; C.Phil., University of California (Davis). Assistant Professor of Political Science, Assistant Director of the Division of Government Research (ISRAD).

HECTOR ANTONIO GARCIA, Diploma (B.A.), Peyrellade Conservatory, Havana. Associate Professor of Music (Part-time).

ROBERTO GUADALUPE GARCIA, B.A., St. Charles Borromeo Seminary. Lecturer in Architecture (Part-time).

[5,3] **LEONARDO GARCIA-BUNUEL,** M.D., University of Zaragoza, Spain. Associate Professor of Psychiatry.

LUIS GARCIA-BUNUEL, B.A., B.S., M.D., University of Zaragoza, Spain. Associate Professor of Neurology.

[85] **CARLOS A. GARCIA-MORAL,** M.D., University of Buenos Aires. Associate Professor of Orthopaedics.

A. MILTON GARRETT, B.A., M.A., University of Northern Colorado; Ed.D., Texas A & M University. Assistant Professor of Industrial Education, Department of Secondary Education.

JAMES ROWLAND GAY, B.S., Virginia Polytechnic Institute; M.D., Johns Hopkins University; M.S., University of Minnesota. Coordinator, New Mexico Regional Medical Program; Assistant Dean of the School of Medicine; Associate Professor of Surgery (Neurosurgery).

HUNTER LEE GEER, B.S., New Mexico State University; J.D., University of New Mexico. Assistant Dean of the School of Law, Lecturer in Law.

FRIEDA LILIAN GEHLEN, B.S., Evangel College; M.A., Ph.D., Michigan State University. Visiting Assistant Professor of Sociology (Part-time).

MICHAEL PIERPONT GEHLEN, B.A., Texas Christian University; M.A., Vanderbilt University; Ph.D., University of Texas. Professor of Political Science, Chairman of the Department of Political Science.

CAROL CULLUM GEIL, A.B., Swarthmore College; M.D., Stanford University. Assistant Professor of Pediatrics, Assistant Professor of Community Medicine.

DOUGLAS ROLAND GEORGE, B.A., M.A., University of Minnesota. Assistant Professor of Art.

ARCHIE GAIL GIBSON, B.S., Ph.D., University of Colorado. Assistant Professor of Mathematics.

[18] **ALICE V. GILBERT,** B.A.F.A., University of New Mexico; M.A., Middlebury College. Instructor in Modern and Classical Languages (Part-time).

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[3] On sabbatical leave second semester.
[5] On leave first semester.
[6] On leave second semester.
[18] Resigned end of Semester I.
[85] Starting 1/1/72.

EDGAR JOHN GILBERT, B.A., University of Texas; M.A., Harvard University; Ph.D., University of California (Berkeley). Associate Professor of Mathematics and Computing Science.

[7] **WILLIAM GRANT GILSTRAP II.,** B.A., Stanford University; J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

ALBERT G. GIORDANO, B.A., Arizona State University; M.Ed., University of Pittsburgh; M.S., Indiana University; Ph.D., University of Ottawa. Professor and Program Head of Business Education, Department of Secondary Education.

MICHA GISSER, B.S., School of Law and Economics, Tel Aviv, Israel; M.A., Ph.D., University of Chicago. Associate Professor of Economics.

GERALDINE SHILLING GLOVER, B.S., University of Utah; M.S., University of Wisconsin. Instructor in Art Education, Lecturer in Music (Part-time).

SAMUEL IALOUS GLOVER, A.B., Lincoln University; M.D., Howard University; M.P.H., Columbia University. Assistant Professor of Psychiatry.

JOHN PAUL GLUCK, B.A., Texas Technological University; M.A., Ph.D., University of Wisconsin. Assistant Professor of Psychology.

JOSEPH GOLDBERG, A.B., Trinity College; LL.B., Boston College. Assistant Professor of Law.

[8] **MITCHELL STEPHEN GOLDBERG,** B.A., M.A., Ph.D., University of New Mexico. Visiting Assistant Professor of History (Part-time).

GERALD MARTIN GOLDHABER, B.A., University of Massachusetts; M.A., University of Maryland; Ph.D., Purdue University. Assistant Professor of Speech Communication.

JAMES LOWTH GOLDSMITH, B.A., Saint Michael's College; M.A., Ph.D., Harvard University. Visiting Assistant Professor of History.

DOLORES GONZALES, B.A., Highlands University; M.A., Teachers College, Columbia University; Ed.D., Pennsylvania State University. Associate Professor of Elementary Education.

[8] **ANGEL GONZALEZ,** B.A., Escuela Normal de Oviedo; B.A., University of Madrid; M.A., Faculdad de Derecho, Universidad de Oviedo. Visiting Professor of Spanish.

GEORGE ADALBERTO GONZALEZ, B.A., Pan American College; M.Ed., University of Texas. Lecturer in Elementary Education.

RUSSELL BRIAN GOODMAN, A.B., University of Pennsylvania; B.A., Jesus College, Oxford, England; Ph.D., Johns Hopkins University. Assistant Professor of Philosophy.

GWENDOLYN DONALDSON GORMAN, B.S., Baylor University; M.A., University of New Mexico. Instructor in Nursing.

JAMES ROMAN GOSZ, B.S., Michigan Technological University; Ph.D., University of Idaho. Assistant Professor of Biology.

LORNA ROSALIE GRABEN, R.N., Mount Sinai Hospital School of Nursing. Adjunct Lecturer in Community Medicine.

[2] **CHARLES THERON GRACE,** B.S.M.E., University of Colorado; M.S.M.E., University of Illinois. Professor of Mechanical Engineering, Assistant Dean of the College of Engineering.

HARRY LEE GRADMAN, B.A., Miami University (Ohio); M.A., Ph.D., Indiana University. Assistant Professor of Elementary Education.

JOHN ROLAND GRAHAM, M.D., Queens University, Ontario. Associate Professor of Psychiatry.

WARREN KIRKLAND GRAHAM, B.S., University of New Mexico; D.D.S., Baylor University. Instructor in Dental Programs (Part-time).

JOHN BRUCE GRAINGER, B.A., Adams State College; M.S., Colorado State University. Clinical Supervisor and Lecturer in Audiology, Department of Speech Communication.

[1] **WAYNE WILLIS GRANNEMANN,** B.S.E.E., M.A., Ph.D., University of Texas. Professor of Electrical Engineering and Computer Science.

RICHARD MICHAEL GRASSL, B.S., University of Santa Clara; M.A., University of Oregon. Instructor in Mathematics.

JEANNE BLAIR GREALISH, A.B., Meredith College; M.Mus. and Art Diploma from New England Conservatory of Music. Lecturer in Music (Part-time).

JOHN ROOT GREEN, B.S., Ph.D., University of California. Professor of Physics.

JEROME GREENBLATT, B.S., University of Illinois; M.D., State University of Leiden, Netherlands. Adjunct Associate Professor of Physical Education.

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[1] On sabbatical leave for year.
[2] On sabbatical leave first semester.
[7] First semester only.
[8] Second semester only.

ARNOLD H. GREENHOUSE, B.A., M.D., University of Kansas. Professor of Neurology, Chairman of the Department of Neurology, Professor of Medicine.

DANIEL H. GREGORY, B.A., Hamilton College, New York; M.D., University of Virginia. Assistant Professor of Medicine.

PETER GREGORY, B.A., Ohio Wesleyan University; Ph.D., Harvard University. Professor of Economics.

G. ROBERT GRICE, B.A., Washburn College; M.A., Ph.D., State University of Iowa. Distinguished Professor of Psychology.

RICHARD JEROME GRIEGO, B.S., University of New Mexico; M.S., Ph.D., University of Illinois. Associate Professor of Mathematics.

JOHN PHILLIPS GRILLO, B.S., Ph.D., University of New Mexico. Instructor in Educational Foundations, [8]Instructor in Secondary Education (Part-time).

THEODORE N. GUINN, A.B., Fresno State College; M.A., University of California at Los Angeles. Associate Professor of Mathematics.

SHYAM H. GURBAXANI, B.S., Royal Institute of Science; M.S., Stanford University; Ph.D., Rutgers University. Assistant Professor of Electrical Engineering and Computer Science.

SHIRLEY LAW GUTHRIE, B.A., Swarthmore College; M.A., Ph.D., Indiana University. Assistant Professor of English.

STANLEY ANDREW GUTIERREZ, Instructor in Music (Chicano Studies) (Part-time).

SAM LERERT GUYLER, B.A., University of Texas; Ph.D., Cornell University. Assistant Professor of Modern Languages (Spanish).

VIVIAN VARNEY GUYLER, B.A., Bates College; M.A., New York University. Lecturer in Art (Part-time).

LIANG-SHIN HAHN, B.S., Ph.D., Stanford University. Assistant Professor of Mathematics.

PAUL LYNN HAIN, B.S.M.E., Southern Methodist University; Ph.D., Michigan State University. Assistant Professor of Political Science.

JAMES ALLEN HALE, B.S., Florida State University; M.Ed., University of Florida; Ph.D., University of Wisconsin. Assistant Professor of Educational Administration.

JUDITH BANNISTER HALL, B.S., Boston University Sargent College; M.S., University of Oregon. Assistant Professor of Physical Education.

DAVID BOYCE HAMILTON, JR., B.A., M.A., University of Pittsburgh; Ph.D., University of Texas. Professor of Economics.

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MARY ELLEN HANSON, B.F.A., Drake University; M.A. in L.S., University of Denver. Assistant Acquisition Librarian, Instructor in Librarianship.

WILLIAM RICHARD HARDY, B.S., M.D., University of Illinois. Associate Professor of Medicine, Associate Professor of Pathology.

BOBBY JACK HARR, B.A., M.S.S.W., University of Texas (Austin). Instructor in Pediatrics (Social Work).

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MARY BIERMAN HARRIS, B.A., Radcliffe College; M.A., Ph.D., Stanford University. Assistant Professor of Educational Foundations.

RICHARD JEROME HARRIS, B.S., University of Wisconsin; M.A., Ph.D., Stanford University. Assistant Professor of Psychology.

RUTH BRODERICK HARRIS, B.S., Cornell University; M.S., University of Tennessee. Associate Professor of Home Economics.

FREDERICK MICHAEL HART, B.S., J.D., Georgetown University; LL.M., New York University. Dean of the School of Law, Professor of Law.

[8] Second semester only.

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KARL WILLIAM HATTLER, B.S., Emerson College; M.S., Ph.D., University of Oklahoma. Adjunct Assistant Professor of Audiology, Department of Speech Communication.

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WARREN ALLEN HEFFRON, A.B., M.D., University of Missouri. Assistant Professor of Community Medicine.

JOHN PAUL HEIDE, B.S., South Dakota School of Mines; M.A., University of New Mexico. Instructor in Mathematics (Part-time).

JOHN JAMES HEIMERICH, B.S., M.S., Kansas State College. Professor of Architecture, Director of the Professional Advisory Service Center, Office of Civil Defense.

MARION JACOB HEISEY, B.A., Otterbein College; M.A., Ph.D., Kent State University. Assistant Professor of Guidance.

JEREMY WILLIAM HEIST, B.A., Harvard University. Assistant Professor of English.

[8] **WILLIAM TODD HELMICH,** B.S., U.S. Air Force Academy; M.S., University of California; M.B.A., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences (Part-time).

PERRY A. HENDERSON, B.S., Morehouse College; M.D., Western Reserve University. Director, Maternity and Infant Care Project; Associate Professor of Obstetrics and Gynecology.

VIRGINIA RUTH McKINNEY HENDERSON, B.A., Spelman College; M.A., Boston University. Instructor in Pediatrics.

MORRIS S. HENDRICKSON, B.S., Birmingham Southern College; M.A., Ph.D., Ohio State University. Director of Institutional Research, Professor of Mathematics.

IRVIN EDWARD HENDRYSON, B.A., University of Denver; M.A., M.D., University of Colorado. Director, Emergency Medical Services Project, New Mexico Regional Medical Program; Associate Professor of Orthopaedics.

NICHOLAS LLEWELLYN HENRY, B.A., Centre College of Kentucky; M.A., Pennsylvania State University; M.P.A., Ph.D., Indiana University. Visiting Assistant Professor of Public Administration.

ROBERT DEUPREE HERRON, B.A., University of Richmond; M.A., Ph.D., University of Wisconsin. Assistant Professor of Modern and Classical Languages; Director, Andean Study and Research Center.

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[84] **ALICE BIERNOFF HIAT,** B.A., Reed College (Oregon); M.A., University of Oregon; Ph.D., University of New Mexico. Adjunct Instructor in Pediatrics (Part-time).

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MICHAEL ALBERT HICKEY, B.S. in Med., M.D., University of Nebraska. Director of the Student Health Service; Instructor in Psychiatry.

MARTHA BETH HICKS, B.S.N., Washington University; M.S., University of Maryland. Associate Professor of Nursing.

BEATRICE ALICE HIGHT, B.A., University of New Mexico; M.A.L.S., University of Denver. Acquisition Librarian, Assistant Professor of Librarianship.

JOHN MURMANN HIGHTOWER, Associate Professor of Journalism.

RICHARD CHARLES HILDNER, B.S., College of Wooster, Ohio; M.A., Ph.D., Ohio State University. Visiting Professor of Mathematics.

CAROLYN MATHILDE HILL, B.S., Pacific Oaks College. Instructor in Home Economics.

EINAR HILLE, Doctorate, University of Stockholm. Adjunct Professor of Mathematics.

ANTHONY GROVE HILLERMAN, B.A., University of Oklahoma; M.A., University of New Mexico. Professor of Journalism, Chairman of the Department of Journalism.

[1] **ABRAHAM P. HILLMAN,** B.A., M.A., Brooklyn College; Ph.D., Princeton University. Professor of Mathematics.

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[1] On sabbatical leave for year.

[8] Second semester only.

[84] Starting 12/1/71.

FRED JOHN HINGER, B.A., Texas Technological College; M.A., Colorado State College. Associate Professor of Physical Education.

GEORGE HIRSHFIELD, B.A., Brooklyn College; M.A., Columbia Teachers College; Ed.D., University of New Mexico. Associate Professor of Secondary Education.

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[1] **JOANNE FIELD HOLLAND,** A.B., Bryn Mawr College; B.A., Oxford University; Ph.D., Harvard University. Associate Professor of English.

ULRICH HOLLSTEIN, B.S., M.S., Ph.D., University of Amsterdam. Associate Professor of Chemistry.

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ROBERT HOLZAPFEL, B.A., M.A., Ph.D., State University of Iowa. Associate Professor of Modern and Classical Languages, Assistant Chairman of the Department of Modern and Classical Languages.

TAMARA HOLZAPFEL, B.A., University of North Carolina at Greensboro; M.A., Ph.D., State University of Iowa. Associate Professor of Modern Languages.

MAGNUS MACK CARY HOMESTEAD, B.A., Kenyon College; M.L., University of Washington. Humanities Librarian, Assistant Professor of Librarianship.

RICHARD BAXTER HOOD, B.A., Duke University; M.A., Syracuse University; Ph.D., Stanford University. Assistant Professor of Speech Communication (Audiology).

VAN DORN HOOKER, B.Arch., University of Texas. University Architect, Associate Professor of Architecture.

KATHERINE DOWLING HOPKINS, B.A., Baylor University; M.A., Trinity University. Lecturer in Dramatic Art.

MARTHA JAY HOPPIN, B.A., University of Michigan; M.A., Harvard University. Lecturer in Art.

REX CARROLL HOPSON, B.A., Baylor University; M.R.E., Southwestern Baptist Theological Seminary; M.A., George Peabody College; M.A., University of Denver. Social Sciences Librarian, Assistant Professor of Librarianship.

JAMES ALBERT HORAK, B.S., University of Illinois; M.S., Ph.D., Northwestern University. Associate Professor of Nuclear Engineering.

LISE MARIE HOSHOUR, B.A., Barnard College. Instructor in Modern and Classical Languages (Part-time).

ARTHUR VINCENT HOUGHTON III, B.S., M.S., University of Illinois; Ph.D., Purdue University. Director of the Civil Engineering Research Facility, Professor of Mechanical Engineering.

ALVIN WENDELL HOWARD, B.A.Ed., M.Ed., Western Washington State College; B.A., University of Washington; Ed.D., University of Oregon. Associate Professor of Secondary Education.

[8] **LEON HOWARD,** B.A., Birmingham Southern College; M.A., University of Chicago; Ph.D., Johns Hopkins University. Visiting Professor of English.

MILTON BRYAN HOWARD, B.A., University of Colorado; M.F.A., Pratt Institute. Associate Professor of Art.

ENID ETHEL HOWARTH, B.A., University of Miami; M.A., University of Connecticut; Ph.D., University of New Mexico. Lecturer in English.

JOHN LEE HOWARTH, B.A., M.A., University of Cambridge; B.S., M.S., Ph.D., University of London. Director of the General Honors Program and the Undergraduate Seminar Program, Professor of Physics, Professor of Radiology.

EDWIN CHASE HOYT, B.A., Harvard University; LL.B., Harvard Law School; Ph.D., Columbia University. Professor of Political Science.

YOUN-CHANG HSU, B.S., Cheng-King University, Taiwan; M.S., University of Washington; Ph.D., Rensselaer Polytechnic Institute. Associate Professor of Mechanical Engineering.

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[1] On sabbatical leave for year.

[8] Second semester only.

GEORGE ARTHUR HUACO, B.A., Ph.D., University of California (Berkeley); M.A., University of California (Los Angeles). Professor of Sociology.

WILLIAM HENRY HUBER, JR., B.A., J.D., Ohio State University. Dean of the University College, Professor of Business and Administrative Sciences.

GARY CLYDE HUFBAUER, B.A., Harvard College; Ph.D., University of Cambridge. Associate Professor of Economics.

MARIE MORRISON HUGHES, A.B., M.A., University of Chicago; Ed.D., Stanford University. Professor of Elementary Education.

CORNIE LEONARD HULSBOS, B.S., M.S., Ph.D., Iowa State University. Professor of Civil Engineering, Chairman of the Department of Civil Engineering.

CLARA WILLIAMS HUMMEL, B.S., University of Illinois; M.A., University of New Mexico. Lecturer in Special Education (Part-time).

JOHN MACE HUNGER, B.A., University of North Dakota; Ph.D., Indiana University. Director of the Albuquerque Urban Observatory, Director of the Division of Government Research (ISRAD), Assistant Professor of Public Administration, Assistant Professor of Political Science.

GEORGE MILLARD HUNSLEY, B.A., University of New Mexico. Assistant Professor of Journalism.

DAVID HERBERT HUNT, B.S., M.S., Ph.D., University of New Mexico. Assistant Professor of Physical Education.

MICHAEL J. HUNT, Certificate, University of New Mexico Dental Programs. Instructor in Dental Programs (Part-time).

DAVID ALLAN HURWITZ, B.S., M.S., Ph.D., Massachusetts College of Pharmacy. Assistant Professor of Pharmacy (Pharmacology).

RICHARD GEORGE HUZARSKI, B.S.C.E., University of Wisconsin; M.S., Texas Technological College. Professor of Civil Engineering.

[1] **CHARLES LATIF HYDER,** B.S., M.S., University of New Mexico; Ph.D., University of Colorado. Lecturer in Astronomy (Part-time).

FRANK WILLIAM IKLÉ, B.A., Ph.D., University of California at Berkeley. Professor of History, Chairman of the Department of History.

[7] **TOBIAS PETER INDERMUHLE,** Diploma in Architecture, Swiss Federal Institute of Technology (Zurich). Visiting Lecturer in Architecture.

MARC HANNA IRWIN, B.A., Northwestern University; M.A., Ph.D., University of California (Berkeley). Assistant Professor of Psychology.

[8] **WILSON HOWARD IVINS,** B.A., Western Michigan University; M.A., University of Arizona; Ed.D., University of Colorado. Professor of Secondary Education.

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[8] **JOHN B. JACKSON,** A.B., Harvard University. Lecturer in Architecture (Part-time).

JANET GAY JACOBS, B.A., Western New Mexico University; M.A., University of New Mexico. Lecturer in Music (Part-time).

WILLIS DANA JACOBS, B.A., M.A., University of New Mexico; Ph.D., University of North Carolina. Professor of English.

RONALD EUGENE JACOBSEN, B.S., University of New Mexico. Varsity Wrestling Coach, Instructor in Physical Education, Director of Intramurals and Student/Faculty Recreation.

[8] **WALTER H.E. JAEGER,** A.B., M.S., Ph.D., Columbia University; S.J.D., Georgetown University. Visiting Professor of Law.

[7] **ROBERT MOSELEY JEFFERSON,** B.S., Michigan College of Mining and Technology; M.B.A., University of New Mexico. Adjunct Professor of Nuclear Engineering.

[7] **MYRIAM YVONNE JEHENSON,** B.A., Salve Regina College; M.A., Catholic University of America; Lecturer in English (Part-time).

ROGER HUBERT JEHENSON, S.Th.L., Dominican College (Belgium); Licence en sciences politiques et sociales, University of Louvain (Belgium); M.A., University of Montreal; M.Ph., Yale University. Associate Professor of Business and Administrative Sciences.

[8] **ARNOLD MILTON JENKINS,** B.S.E., M.B.A., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences (Part-time).

[7] **JANET LEE JENKINS,** B.F.A., M.A., University of New Mexico. Lecturer in Art (Part-time).

---

[1] On sabbatical leave for year.
[7] First semester only.
[8] On sabbatical leave second semester.
[8] Second semester only.

LEONARD LEON JERMAIN, B.S., M.S., University of Oregon. Professor of Journalism.

[2] ROBERT CLIFFORD JESPERSON, B.A., University of Utah; M.A., Ph.D., Stanford University. Associate Professor of Modern Languages; Assistant Dean, College of Arts and Sciences.

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GERALD CONRAD JOHNSON, B.A., M.F.A., University of Colorado. Assistant Professor of Art.

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PEDER JACK JOHNSON, B.A., M.A., University of Minnesota; Ph.D., University of Colorado. Associate Professor of Psychology.

RICHARD MALCOLM JOHNSON, B.A.E., School of Art Institute, Chicago. Adjunct Assistant Professor of Art Education.

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WILLIAM WAYNE JOHNSON, B.S., M.S., Ph.D., University of Minnesota. Associate Professor of Biology.

PAUL JONAS, Diploma, Ph.D., University of Technical and Economic Sciences, Budapest; Ph.D., Columbia University. Associate Professor of Economics.

BEN JERAL JONES, B.S., University of Washington; M.S., Ph.D., University of Oregon. Assistant Professor of Mathematics.

DAVID RICHARD JONES, B.A., Northwestern University; M.A., Ph.D., Princeton University. Assistant Professor of English.

[7] DONALD LEE JONES, B.A., University of Texas; J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

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SANDRA BURTON JONES, B.S.N., University of Iowa; M.S., University of Colorado. Instructor in Nursing.

VERNON DOUGLAS JONES, B.A., Florence State College; Ph.D., Vanderbilt University. Adjunct Assistant Professor of Psychiatry (Pharmacology).

SCOTT WILSON JORDAN, A.B., M.D., University of Kansas. Associate Professor of Pathology.

[1] FREDERICK DSUIN JU, B.S., University of Houston; M.S., Ph.D., University of Illinois. Professor of Mechanical Engineering.

WILLIAM JAMES JUDGE, B.A., Ph.D., University of New Mexico. Assistant Professor of Anthropology.

[5] JOHN KACERE, M.F.A., State University of Iowa. Professor of Art.

MILTON KAHN, B.S., University of California; Ph.D., Washington University. Professor of Chemistry.

LEO KANOWITZ, B.A., College of the City of New York; J.D., University of California; LL.M., J.S.D., Columbia University. Professor of Law.

SIMON TSAI KAO, B.S., Chi-Nan National University of China; Ph.D., Catholic University of America. Associate Professor of Mathematics, Acting Chairman of the Department of Mathematics and Statistics.

RALPH JAY KAPLAN, B.A., Hofstra College; M.D., Albany Medical College. Associate Professor of Surgery.

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[1] On sabbatical leave for year.
[2] On sabbatical leave first semester.
[5] On leave first semester.
[7] First semester only.

SHLOMO KARNI, B.S.E.E., Israel Institute of Technology; M.Eng., Yale University; Ph.D., University of Illinois. Professor of Electrical Engineering and Computer Science.

KENNETH GEORGE KASTELLA, B.S., M.S., Ph.D., University of Washington. Assistant Professor of Physiology.

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RICHARD EARL KEESEE, M.S., Pharm.D., University of Southern California. Assistant Professor of Pharmacy (Radiopharmacy), Assistant Professor of Radiology (Radiopharmacy).

KLAUS KEIL, M.S., Friedrich-Schiller University (Germany); Ph.D., Johannes Gutenberg University (Germany). Director of the Institute of Meteoritics, Professor of Geology.

[31] **GARY KEIMIG,** B.F.A., Wichita State University; M.F.A., University of Colorado. Assistant Professor of Art.

CAROL ANN KEITH, B.S., St. Olaf College; M.S. University of Colorado School of Nursing. Instructor in Nursing.

[7] **ROBERT BRUCE KEITH,** B.A., Texas A&M College; J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

[7] **DAVID MICHAEL KELLEY,** B.A., Colby College; M.A., University of New Mexico. Instructor in English (Part-time).

DAVID OTIS KELLEY, B.A., M.A., University of Southern California. Director of the General Library, Professor of Library Science.

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ROBERT KELLNER, M.D., Ph.D., University of Liverpool School of Medicine (England). Associate Professor of Psychiatry.

ROBERT TOWNE KELLOGG, B.A., Dartmouth College; M.D., University of Colorado. Instructor in Psychiatry.

RUBEN DAVID KELLY, B.S., M.S., Ph.D., Oklahoma State University. Professor of Electrical Engineering and Computer Science.

[7] **DOROTHY JOANNE KEMPTER,** B.M., University of Kansas; M.M., University of Illinois. Lecturer in Music (Part-time).

BERNARD THOMAS KENNA, B.S., Northern Arizona University; M.S., University of Mississippi; Ph.D., University of Arkansas. Associate Professor of Chemistry (Part-time).

[3] **GEORGE LEONARD KEPPERS,** B.Ed., St. Cloud State College; M.A., Colorado State College; Ed.D., University of Colorado. Professor of Guidance.

PAUL RICHARD KERKOF, B.S., St. Mary's College (California); Ph.D., University of California. Assistant Professor of Biology.

[3] **ROBERT WILLIAM KERN,** B.A., Antioch College; M.A., Ph.D., University of Chicago. Assistant Professor of History.

CHARLES RAY KEY, B.S., Oklahoma State University; M.D., M.S., Ph.D., University of Oklahoma. Assistant Professor of Pathology.

DAVID EUGENE KIDD, B.S., Northern Arizona University; M.S., Northwestern University; M.S.T., University of New Hampshire; Ph.D., Michigan State University. Associate Professor of Biology.

[7] **WILFORD WAYNE KIMBALL, JR.,** A.S., B.A., College of Southern Utah; M.F.A., University of Arizona. Lecturer in Art (Part-time).

DAVID SOLOMON KING, B.A., Manchester College; M.A., Ph.D., Indiana University. Associate Professor of Astronomy.

SHAREL ANDERSON KING, B.S., M.S., Utah State University. Assistant Professor of Physical Education (Part-time).

ALEXANDER LIONEL KISCH, B.A., Columbia University; M.D., Harvard Medical School. Associate Professor of Medicine.

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[3] On sabbatical leave second semester.

[7] First semester only.

[31] Resigned 12/31/71.

ROBERT ALAN KLEIN, B.A., Hunter College; M.A., University of Tennessee. Instructor in Pediatrics, Assistant Director of the Vista Larga Therapeutic School Project.

DIANE JENNINGS KLEPPER, B.A., M.D., University of Kansas; M.A., Columbia University. Assistant Dean for Student Affairs and Admissions, School of Medicine; Assistant Professor of Medicine.

[21] **MORTON M. KLIGERMAN,** B.S., M.D., M.Sc.(Rad.), Temple University; M.A. (Honorary), Yale University. Professor of Radiology; Chief of the Division of Radiation Therapy; Director of the Cancer Center; Assistant Director for Radiation Therapy, Los Alamos Scientific Laboratory.

ROBERT DENTON KLINE, A.B., Shepherd College; M.Ed., University of Maryland; Ph.D., Syracuse University. Director, Instructional Media Services; Associate Professor of Secondary Education.

EUGENE LARUE KLINGLER, JR., B.S., M.D., Tufts University. Assistant Professor of Medicine.

BESS CHEN KNAPP, B.A., Taiwan National University; M.L.S., Rutgers, The State University. Assistant General Reference Librarian, Instructor in Librarianship.

[7] **JEANNE JENSEN KNIGHT,** B.S., Brigham Young University; M.E., Utah State University; Ed.D., University of New Mexico. Instructor in Elementary Education (Part-time).

HAROLD KNUD KNUDSEN, B.S., M.S., Ph.D., *University of California. Associate Professor of* Electrical Engineering and Computer Science.

[2] **KARL PETER KOENIG,** B.A., Trinity College; M.S., Ph.D., University of Washington. Associate Professor of Psychology.

JACK KOLBERT, B.A., M.A., University of Southern California; Ph.D., Columbia University. Professor of Modern and Classical Languages.

[1] **LAMBERT HERMAN KOOPMANS,** B.A., San Diego State College; Ph.D., University of California at Berkeley. Professor of Mathematics, Chairman of the Department of Mathematics and Statistics.

LEWIS HENRY KOPLICK, B.A., Brandeis University; M.D., Washington University. Assistant Professor of Obstetrics and Gynecology.

MARIO KORNFELD, M.D., D.Sc., University of Zagreb, Yugoslavia. Associate Professor of Pathology.

ARNOLD HERMAN KOSCHMANN, B.A., Valparaiso University; B.S.E.E., M.S., Ph.D., Purdue University. Professor of Electrical Engineering and Computer Science.

B. EUGENE KOSKEY, B.A., Augustana College; M.S., Indiana University. Assistant Professor of Secondary Education and Director of the Learning Materials Center, College of Education.

MARY KAY KOSTER, B.S.N., M.A., University of Iowa. Instructor in Nursing.

WILLIAM JACOB KOSTER, B.S., Ph.D., Cornell University. Professor of Biology.

JAMES NORMAN KRAFT, JR., B.A., University of Arkansas; M.F.A., University of New Mexico. Assistant Professor of Art.

[7] **RONALD HERBERT KROOP,** B.S., M.S., Oklahoma State University. Adjunct Professor of Civil Engineering.

RITA CAROLINE ANN KROSKA, B.S., M.S., Catholic University; M.P.H., Ph.D., University of Minnesota. Professor of Nursing.

ALBERT MASAKIYO KUDO, B.A.S., University of Toronto; M.S., McMaster University; Ph.D., University of California (San Diego). Associate Professor of Geology.

JOSEPH MARSHALL KUNTZ, B.A., M.A., University of New Mexico; Ph.D., University of Denver. Professor of English.

BEVERLY ANN KURUCZ, A.B., Washington University; M.A., University of New Mexico. Lecturer in Special Education (Part-time).

WALTER THOMAS KYNER, A.B., M.A., Ph.D., University of California (Berkeley). Professor of Mathematics.

LEWIS HENRY LACKNER, A.B., Stanford University; M.D., Washington University. Associate Professor of *Surgery (Urology).*

[14] **AARON J. LADMAN,** B.A., New York University; Ph.D., Indiana University. Professor of Anatomy, Chairman of the Department of Anatomy.

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[1] On sabbatical leave for year.
[2] On sabbatical leave first semester.
[7] First semester only.
[14] On sabbatical leave 7/1/71-8/31/71 and 10/1/71-6/30/72.
[21] Starting 3-1-72.

[7] **ENRIQUE LAFOURCADE,** B.A., Universidad de Chile. Visiting Professor of Spanish.

ENRIQUE EUFRASIO LAMADRID, B.A., Western Maryland College; M.A., New Mexico Highlands University; M.A.T.S., University of New Mexico. Assistant Professor of Modern and Classical Languages.

LLOYD EDMOND LAMB, B.A., North Texas State College; M.S., Ph.D., Purdue University. Associate Professor of Speech Communication (Audiology), Director of Speech Pathology and Audiology, Associate Professor of Surgery (Otolaryngology, Audiology).

MARCIA ELLEN LANDAU, B.S., Queens College, City University of New York; M.S., University of Miami. Visiting Instructor in Psychology (Part-time).

HAROLD WADE LAVENDER, A.B., Southern Methodist University; M.A., Ph.D., University of New Mexico. Vice President for Student Affairs, Associate Professor of Educational Administration.

DAVID HILLIS LAW IV, A.B., M.D., Cornell University. Professor of Medicine.

[15] **RICHARD ELMER LAWRENCE,** B.S., University of Minnesota; M.A. Ed.D., Teachers College, Columbia University. Dean of the College of Education, Professor of Educational Administration.

ROBERT HARLEY LAWRENCE, Lecturer in Journalism (Part-time).

WAYNE RODERIC LAZORIK, B.S., M.F.A., University of Minnesota. Instructor in Art.

JOHN K. LEACH, B.S., Baldwin-Wallace College; M.D., Albany Medical College. Associate Professor of Medicine.

CHRISTOPHER PRATT LEAVITT, B.S., Ph.D., Massachusetts Institute of Technology. Professor of Physics.

FRANCIS NEWTON LEBARON, B.S., Massachusetts Institute of Technology; M.A., Boston University; Ph.D., Harvard University. Professor of Biochemistry, Chairman of the Department of Biochemistry.

ALAN OTTO LEBECK, B.S., M.S., Ph.D., University of Illinois. Assistant Professor of Mechanical Engineering.

DONALD CLARK LEE, M.A., Ph.D., University of California. Assistant Professor of Philosophy (Part-time).

LEONARD LEHRER, B.F.A., Philadelphia College of Art; M.F.A., University of Pennsylvania. Professor of Art, Chairman of the Department of Art.

ROBERT ALBIN LENBERG, B.A., Brigham Young University; M.S. Ph.D., University of Minnesota. Associate Professor of Business and Administrative Sciences.

[4] **JOHN WILLIAM LEVCHUK,** B.Sc., M.Sc., Philadelphia College of Pharmacy and Science. Assistant Professor of Pharmacy (Hospital Pharmacy).

ARNOLD MYRON LEVICK, D.D.S., University of Missouri. Instructor in Dental Programs (Part-time).

JEROME LEVY, B.A., University of New Mexico; M.A., Ph.D., University of Denver. Associate Professor of Psychiatry.

CHARLES ELMER LEWIS, JR., M.D., University of California. Assistant Professor of Surgery and Assistant Professor of Community Medicine.

[18] **JAMES A. LEWIS,** B.S., University of Miami; M.D., University of Florida. Assistant Professor of Neurology.

JAMES VERNON LEWIS, B.A., M.A., Ph.D., University of California. Associate Professor of Mathematics.

LINDA KATHRYN LEWIS, B.A., M.L.S., University of Oklahoma. Assistant Humanities Librarian, Instructor in Librarianship.

RALPH WAYNE LEWIS, B.F.A., M.A., University of New Mexico. Associate Professor of Art.

LESTER M. LIBO, M.A., Ph.D., Stanford University. Professor of Psychiatry (Psychology), Professor of Psychology.

EDWIN LIEUWEN, B.A., M.A., Ph.D., University of California. Professor of History.

J. DAVID LIGON, B.S., University of Oklahoma; M.S., University of Florida; Ph.D., University of Michigan. Associate Professor of Biology.

BYRON TRENT LINDSEY, B.A., B.J., University of Texas; M.A., University of Illinois; Ph.D., Cornell University. Assistant Professor of Modern and Classical Languages.

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[4] On leave for the year.
[7] First semester only.
[15] On leave 1/1-1/23/72.
[18] Resigned end of Semester I.

ROBERT HILL LISTER, B.A., M.A., University of New Mexico; M.A., Ph.D., Harvard University. Professor of Anthropology.

WILLIAM MORRIS LITCHMAN, B.A., University of Colorado; Ph.D., University of Utah. Assistant Professor of Chemistry; Assistant Professor of Health, Physical Education, and Recreation.

LAWRENCE F. LOCKE, B.S., M.Ed., Springfield College; Ph.D., Stanford University. Associate Professor of Physical Education.

JULIANNE LOUISE LOCKWOOD, B.A., Upsala College; M.A., New York University. Instructor in Pediatrics (Psychology).

[16] **ROBERT BERNER LOFTFIELD,** B.S., M.A., Ph.D., Harvard University. Professor of Biochemistry.

DOROTHY MUMFORD LOGAN, B.A., New Mexico State Teachers College; M.A., University of New Mexico. Assistant Professor of English.

FRANK ANDERSON LOGAN, B.A., M.A., Ph.D., State University of Iowa. Professor of Psychology, Chairman of the Department of Psychology.

GARY WARREN LONG, B.A., Fresno State College; M.D., University of California (Los Angeles). Assistant Professor of Pathology.

ROBERT LEROY LONG, B.S.E.E., Bucknell University; M.S.E., Ph.D., Purdue University. Associate Professor of Nuclear Engineering.

CATHERINE ELLEN LOUGHLIN, B.S., University of Connecticut; M.Ed., Pennsylvania State University; Ed.D., Rutgers University. Associate Professor of Elementary Education.

GLENN DAVID LUBASH, B.A., Columbia University; M.D., State University of New York. Professor of Medicine, Head of Renal Division.

DAVID MICHAEL LUCOFF, B.S. in Nuc. Eng., M.S., Ph.D., University of Wisconsin. Assistant Professor of Nuclear Engineering.

[18] **RICHARD D. LUEKER,** M.D., University of Colorado. Assistant Professor of Medicine.

THOMAS ROBERT LYONS, B.S., M.S., Ph.D., University of New Mexico. Instructor in Anthroplogy (Part-time).

B. CATHER MACCALLUM, B.A., Westhampton College, University of Richmond; B.F.A., University of New Mexico; M.A., San Francisco State College. Lecturer in Dramatic Art (Part-time).

[8] **MICHELINE MACCARIO,** M.D., University of Louvain (Belgium). Adjunct Assistant Professor of Neurology (Part-time).

RAYMOND RALPH MACCURDY, JR., B.A., M.A., Louisiana State University; Ph.D., University of North Carolina. Professor of Modern and Classical Languages.

HAROLD ALFRED MACKAY, B.Sci. Rutgers University; M.Sci., Ph.D., University of New Mexico. Visiting Assistant Professor of Biology.

RACHELLE T. MACKAY, B.S., Temple University; M.S., University of New Mexico. Instructor in Physical Education (Part-time).

NEOSHA ANN MACKEY, B.A., M.L.S., University of Oklahoma. Business Administration Librarian, Instructor in Librarianship.

WILLIAM TILTON MacPHERSON, JR., B.A., J.D., University of New Mexico. Chief Attorney for the Clinical Program of the School of Law, Assistant Professor of Law.

ZELDA RUTH MAGGART, B.S., Northeast Missouri State College; M.A., Ph.D., University of New Mexico. Instructor in Elementary Education. (Part-time).

MANORANJAN MAJUMDAR, B.A., M.A., University of Calcutta. Visiting Assistant Professor of Economics.

MIRIAM PITSCHNER MALM, B.S., M.S., University of New Mexico. Instructor in Chemistry.

BRYN JOHN MANLEY, National Diploma of Design, Hornsey College of Art (London); Associate of Royal College of Art (London). Associate Professor of Art.

JOHN STEPHEN MANN, B.A., Wesleyan University; M.A., Columbia University; Ph.D., University of Wisconsin. Associate Professor of Elementary Education.

SHARON LYNNETTE MANTIK, B.S.N., University of Wisconsin; M.S.N., University of Colorado. Instructor in Nursing.

LEON JESUS MÁRQUEZ, B.A., M.A.T.S., University of New Mexico. Instructor in Modern and Classical Languages.

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[8] Second semester only.

[16] On sabbatical leave 9/1/71-8/31/72.

[18] Resigned end of Semester I.

JOEL H. MARTIN, JR., B.S., M.S., Oklahoma State University. Adjunct Professor of Mechanical Engineering.

[23] **MAVIS DOUGHTY MARTIN**, B.A., M.Ed., University of Oklahoma; Ph.D., University of Iowa. Associate Professor of Elementary Education.

[4] **WILLIAM CLARENCE MARTIN**, B.S., Purdue University; M.A., Ph.D., Indiana University. Professor of Biology.

WILLIAM JOHN MARTIN, B.A., University of Missouri; M.F.A., Yale University. Director of Popejoy Hall, Professor of Dramatic Art.

[7] **JOE L. MARTINEZ**, B.A., University of New Mexico; J.D., University of California. Clinical Lecturer in Law (Part-time).

JOSÉ ELEAZAR MARTINEZ, B.S., in C.E., University of New Mexico; M.S., Iowa State University. Professor of Civil Engineering.

[7] **KIRTLEY FLETCHER MATHER**, B.S., Denison University; Ph.D., University of Chicago. Visiting Professor of Geology (Part-time).

[22] **JAMES ROBERT MATTHEWS**, B.S., University of Illinois; M.S., University of Missouri (Rolla). Assistant Professor of Civil Engineering.

CHARLES MATTOX, Attended McPherson College, Bethany College and Kansas City Art Institute. Professor of Art.

JUDITH THERESE MAURIN, B.S., M.S., St. Xavier College. Assistant Professor of Nursing.

NORRIS KNOX MAXWELL, B.S. in Ed., M.L.S., University of Texas. Readers' Services Librarian, Associate Professor of Librarianship.

GERALD WILLIAM MAY, B.S., Bradley University; M.S., Ph.D., University of Colorado. Assistant Professor of Civil Engineering.

MARVIN CLARK MAY, B.S. in C.E., University of New Mexico; M.S., Oklahoma State University. Professor of Civil Engineering.

THOMAS WALTER MAYER, Lecturer in English.

JACK MERRILL McCABE, M.D., University of Oklahoma. Assistant Director, Student Health Service; Associate Professor of Health Education.

HAROLD GILMAN McCANN III, A.B., Allegheny College; M.A., Princeton University. Assistant Professor of Sociology.

ROBERT JAMES McCARTHY, A.B., University of Southern California; M.A., Ph.D., University of Kansas. Assistant Professor of Psychiatry (Psychology).

THOMAS STRUEVER McCONNELL, B.S., University of Wyoming; M.D., University of Illinois. Assistant Professor of Pathology; Director of the Clinical Laboratories, School of Medicine.

WILLIAM ALEXANDER McCONNELL, B.S., University of New Mexico. Lecturer in Architecture (Part-time).

ERIC THOR McCROSSEN, B.A., University of New Mexico. Visiting Instructor in Journalism (Part-time).

FRANK ELLIOT McCULLOCH, B.S., University of New Mexico; M.A., New Mexico Highlands University; M.F.A., Instituto Allende, Mexico. Adjunct Assistant Professor of Art Education.

[4] **AGNES CHARLENE McDERMOTT**, B.A., Ph.D., University of Pennsylvania. Associate Professor of Philosophy.

RICHARD LANE McDOWELL, A.B., Baker University; M.S., Kansas State Teachers College; Ed.D., University of Kansas. Associate Professor of Special Education.

WALTER WAYNE McEVILLY, B.A., Ph.D., University of New Mexico. Visiting Associate Professor of Philosophy.

MARLENE BEVERLY McGANN, B.S., Augustana College; M.S., George Washington University. Assistant Professor of Nursing.

FRANCES McGILL, B.A., Mills College; M.S., University of Washington; Ph.D., Ohio State University. Professor of Physical Education.

DONALD JAMES McINTOSH, B.A., University of British Columbia; M.F.A., Yale University. Associate Professor of Art Education, Chairman of the Department of Art Education.

DONALD ALEXANDER McKENZIE, B.A., University of New Mexico; Ph.D., Stanford University. Professor of Modern and Classical Languages.

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[4] On leave for the year.
[7] First semester only.
[22] Starting second semester.
[23] Starting 10/1/71.

DAVID RAY McKINNEY, B.S., Southwestern State College; M.T. (ASCP), Tucson Medical Center. Lecturer in Medicine.

LEROY CLARENCE McLAREN, B.A., San Jose State College; M.A., Ph.D., University of California at Los Angeles. Professor of Microbiology, Chairman of the Department of Microbiology.

DONALD REED McLAUGHLIN, B.S., University of California at Los Angeles; Ph.D., University of Utah. Assistant Professor of Chemistry.

LOIS LaSHELLE McLEOD, A.A., Stephens College. Lecturer in Music.

HELEN LATTIN McMICHAEL, B.S., University of New Mexico. Instructor in Secondary Education (Part-time).

IMOGEAN HELENA McMURRAY, B.S., Oklahoma College for Women; M.S., University of Tennessee. Assistant Professor of Home Economics.

PATRICK HAYES McNAMARA, B.A., M.A., St. Louis University; Ph.D., University of California (Los Angeles). Assistant Professor of Sociology.

CHILDRESS McQUEEN, B.S., East Texas Baptist College; M.B.A., University of Denver. Assistant Professor of Business Education, Department of Secondary Education.

DONALD CHRISTOPHER McRAE, B.F.A., M.A., University of New Mexico. Associate Professor of Music, Associate Dean of the College of Fine Arts.

JAMES HERMAN MEADOWS, B.S., New Mexico State University; M.S., University of New Mexico. Adjunct Lecturer in Pathology.

JOHN HELLER MECHEM, B.S., M.S.Ed., Colorado State University. Instructor in Physical Education; Head Swimming Coach.

EFFIE E. G. MEDFORD, B.S., Phillips University; M.D., University of New Mexico. University Physician, Student Health Service; Assistant Professor of Health Education.

[2] **HAROLD CHARLES MEIER,** B.A., M.A., Ph.D., University of Colorado. Associate Professor of Sociology.

IVAN PETER MELADA, B.A., State Teachers College (West Chester, Pa.); M.A., Ph.D., University of California (Berkeley). Associate Professor of English.

[18] **OVE J. MELLBYE,** M.D., University of Oslo (Norway). Instructor in Medicine.

[6] **GILBERT WILSON MERKX,** A.B., Harvard University; M.A., Ph.D., Yale University. Assistant Professor of Sociology.

PATRICIA MOEHRIG MERSHON, B.S., M.A., Ph.D., University of New Mexico. Assistant Professor of Pediatrics.

RONALD PIERCE MESSNER, B.A., Oberlin College; M.D., University of Chicago. Assistant Professor of Medicine.

RAY K. METZKER, B.A., Beloit College; M.S., Illinois Institute of Technology. Visiting Associate Professor of Art.

RICHARD CLYDE METZLER, B.S., University of Michigan; M.A., Ph.D., Wayne State University. Associate Professor of Mathematics.

ROBERT MICALI, B.S.Ed., M.Ed., Temple University; Ed.D., Rutgers University. Associate Professor of Guidance and Special Education.

WILLIAM MONROE MICHENER, A.B., Dartmouth College; M.D., Tufts University Medical School; M.S., University of Minnesota. Associate Professor of Pediatrics.

CLARA O. MIERA, Certificate, Dental Programs, University of New Mexico. Instructor in Dental Assisting.

SIGMUND ANDREW MIERZWA, JR., B.S., Clarkson College of Technology; M.S., University of Minnesota; M.A., George Washington University; Ph.D., Stanford University. Assistant Professor of Secondary Education.

GEORGE BERTRAM MILLER, JR., B.A., St. John's College; M.S., Columbia University. Humanities Bibliographer, Assistant Professor of Librarianship.

HUGH MILTON MILLER, B.A., University of Oregon; M.A., Ph.D., Harvard University. Professor of Music.

JOANNE CLARICE MILLER, B.S., University of Nebraska; M.S., Kansas State College. Instructor in Home Economics (Part-time).

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[2] On sabbatical leave first semester.

[6] On leave second semester.

[18] Resigned end of Semester I.

LARRY JACK MILLER, B.S., M.A., Ph.D., Arizona State University. Assistant Professor of Psychiatry, Assistant Professor of Psychology.

VICTORIA ANN MILLS, B.A., University of Arizona. Instructor in Elementary Education.

MERLE MITCHELL, B.A., Southern Methodist University; M.A., University of New Mexico; Ph.D., George Peabody College for Teachers. Professor of Mathematics.

RUSSELL DUNCAN MITCHELL, B.S., M.S., Southern Illinois University. Assistant Professor of Physical Education; Varsity Gymnastics Coach.

WAYNE PAUL MOELLENBERG, B.A., University of Colorado; M.A., Ed.D., Colorado State College. Associate Dean of the Graduate School. Associate Professor of Educational Foundations.

FRED W. MOELLER, B.A., Southwestern State College (Oklahoma); M.A., Sul Ross State College (Texas). Adjunct Assistant Professor of Health Education.

MARTIN ISRAEL MONDLICK, A.B., Brown University; J.D., Harvard University. Visiting Lecturer in Business and Administrative Sciences (Part-time).

FRED ELOY MONDRAGON, B.S., University of New Mexico; M.B.A., George Washington University. Assistant Professor of Hospital Administration, Department of Community Medicine.

[8] **PETER GUNN MONTAGUE,** B.A., University of the Americas; M.A., Indiana University; Ph.D., University of New Mexico. Lecturer in Architecture (Part-time).

DIXON McGUIRE MOODY, M.D., University of Texas (Houston). Assistant Professor of Radiology (Neuroradiology).

NICOLAAS JOHANNES MOOLENIJZER, B.A., Teachers College, Amsterdam; M.S., Academy of Physical Education, The Netherlands; B.A., San Jose State College; M.S., University of California at Los Angeles; Ph.D., University of Southern California. Associate Professor of Physical Education.

[7] **BRUCE PAUL MOORE,** B.S.,Ch.E., New Mexico State University; J.D., University of New Mexico. Lecturer in Law (Part-time).

JAMES CLARK MOORE, B.A.Ed., M.A.Ed., Ph.D., Arizona State University. Director of Testing, University College; Associate Professor of Educational Foundations.

MARGARET MOYLIN MOORE, Diploma, Santa Clara County (California) Hospital School of Nursing; B.S., Columbia University; M.S., University of California (Los Angeles). Lecturer in Nursing (Part-time).

SISTER GIOTTO MOOTS, B.F.A., Art Institute of Chicago; M.A., Villa Schifanvia (Rosary College); M.F.A., University of Wisconsin. Lecturer in Art (Part-time).

GERALDINE ANN ELLSWORTH MORGAN, B.S., St. Anselm's College; M.S., Boston University. Instructor in Nursing.

KENNETH MORGAN, B.S., University of Michigan; M.S., Ph.D., University of Chicago. Assistant Professor of Anthropology.

PERRY T. MORI, B.S., B.A., M.B.A., Northwestern University; J.D., University of New Mexico. Professor of Business and Administrative Sciences.

DONALD ROSS MORRISON, B.E., Northern Illinois State Teachers College; M.S., Ph.D., University of Wisconsin. Professor of Mathematics and Computing Science.

EDWARD ALBERT MORTIMER, JR., A.B., Dartmouth College; B.M., M.D., Northwestern University. Professor of Pediatrics, Chairman of the Department of Pediatrics.

JOAN ROTHWELL MORTIMER, B.A., Smith College; M.A., Western Reserve University; Ph.D., University of New Mexico. Instructor in Community Medicine.

ROBERT DAVID MOSELEY, JR., M.D., Louisiana State University. Professor of Radiology, Assistant Chairman of the Department of Radiology.

CHARLES FREDERICK MUELLER, B.A., M.D., University of Cincinnati. Associate Professor of Radiology.

HUGH BROWN MUIR, B.S., University of Oregon; J.D., University of Michigan. Professor of Law.

DAVID H. MUNGER, B.S., Iowa State University; M.D., Northwestern University. Adjunct Assistant Professor of Orthopaedics.

ROBERT ALLIOT MUNSICK, B.S., Cornell University; M.D., Ph.D., Columbia University. Professor of Obstetrics and Gynecology, Chairman of the Department of Obstetrics and Gynecology.

JOHN DENIS MURATI, B.A., Ph.D., University of Wisconsin. Instructor in Psychiatry (Psychology).

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[7] First semester only.

[8] Second semester only.

PATRICIA MURPHY, B.A., University of Rochester; M.A., Ph.D., University of Wisconsin. Assistant Professor of Modern and Classical Languages.

RICHARD E. MURPHY, B.A., St. Lawrence University; M.A., George Washington University; Ph.D., Clark University. Professor of Geography, Chairman of the Department of Geography.

RUTH ANN MURPHY, B.S., University of Texas; Ph.D., University of Texas at Austin. Assistant Professor of Chemistry (Part-time).

BEATRICE LOUISE MURRAY, B.S., University of Portland; M.N., University of Washington; Ed.D., Teachers' College, Columbia University. Dean of the College of Nursing, Professor of Nursing.

HARRY NADLER, B.A., M.A., University of California. Associate Professor of Art.

LEONARD M. NAPOLITANO, B.S., Santa Clara University; M.S., Ph.D., St. Louis University. Professor of Anatomy, Acting Chairman of the Department of Anatomy.

GERALD DAVID NASH, B.A., New York University; M.A., Columbia University; Ph.D., University of California. Professor of History.

MARSHALL RUTHERFORD NASON, B.A., M.A., Louisiana State University; Ph.D., University of Chicago. Professor of Modern and Classical Languages, Director of the Latin American Center.

IRENE MURPHY NAVARRE, G.D.H., University of Minnesota. Instructor in Dental Programs (Part-time).

DOUGLAS CARLYLE NECKERS, A.B., Hope College; Ph.D., University of Kansas. Associate Professor of Chemistry.

MARTIN CYRIL NEEDLER, A.B., Ph.D., Harvard University. Professor of Political Science, Director of the Division of Inter-American Affairs.

[7] **JEAN BAILEY NELSON,** B.A., Nebraska Wesleyan University; M.A., Texas Technological University. Instructor in English (Part-time).

KENNETH MICHAEL NELSON, B.A., M.D., Columbia University. Assistant Professor of Surgery (Neurosurgery).

[8] **ROBERT DEWEY NESBITT,** B.S., North Texas State University; M.Ed., Texas A and M University. Associate Professor of Industrial Education, Department of Secondary Education.

BEAUMONT NEWHALL, A.B., A.M., Harvard University. Visiting Professor of Art.

JOHANNA BIEBESHEIMER PORTER NICHOLS, B.A., University of Iowa. Instructor in Russian (Part-time).

MICHAEL JAMES PORTER NICHOLS, B.A., University of California (Berkeley). Assistant Professor of Anthropology.

ANNE NOGGLE, B.F.A., M.A., University of New Mexico. Lecturer in Art (Part-time).

RICHARD STAAB NORDHAUS, B.A., Dartmouth College; B.Arch., University of Pennsylvania. Assistant Professor of Architecture.

RALPH DAVID NORMAN, B.S., College of the City of New York; M.A., Teachers College, Columbia University; Ph.D., Ohio State University. Professor of Psychology, Associate Dean of the College of Arts and Sciences.

FREDERICK REYES NORWOOD, B.S., University of California (Los Angeles); M.S., Ph.D., California Institute of Technology. Instructor in History (Chicano Studies) (Part-time).

[2] **MONICA NOVITSKI,** D.H., D.D.S., Marquette University. Professor of Dental Hygiene.

S. SCOTT OBENSHAIN, B.S., Virginia Polytechnic Institute; M.D., Bowman Gray School of Medicine. Assistant Professor of Pediatrics, Assistant Professor of Community Medicine.

FRANK EDWIN O'BRIEN, B.S., University of New Hampshire; M.B.A., University of Chicago; M.L.S., University of Texas. Science and Engineering Librarian, Assistant Professor of Librarianship.

HAROLD ALOYSIOUS O'BRIEN, JR., B.A., University of Texas; M.S., New Mexico State University; Ph.D., University of Tennessee. Adjunct Assistant Professor of Radiology (Biophysics).

RALPH DOUGLAS O'DELL, B.S., Ph.D., University of Texas. Associate Professor of Nuclear Engineering, Director of the Graduate Division of the Los Alamos Residence Center.

MARILYN MARKUS O'HAIR, B.A., Trinity University, M.S.Ed., Purdue University; M.A., University of Denver. Instructor in Library Science, College of Education (Part-time).

---

[2] On sabbatical leave first semester.

[8] On sabbatical leave second semester.

[7] First semester only.

JANICE KAY OLSON, B.A., Western State College; M.S., University of Wisconsin. Assistant Professor of Physical Education.

KENNETH DONALD OLSON, B.A., Concordia College; M.S.L.S., University of Wisconsin. Science and Engineering Bibliographer; Assistant Professor of Librarianship.

TERRANCE DUNNING OLSON, B.S., M.S., Brigham Young University. Assistant Professor of Home Economics.

GEORGE ELBERT OMER, JR., B.A., Fort Hays Kansas State College; M.D., University of Kansas; M.S., Baylor University. Professor of Orthopaedics, Chairman of the Department of Orthopaedics, Professor of Anatomy.

CYRUS OMID'VARAN, B.S., South Dakota State University; M.S., University of Kansas; Ph.D., University of Delaware. Associate Professor of Civil Engineering.

[8] **BRIAN EDGAR O'NEIL,** B.A., M.A., Ph.D., University of California (Berkeley). Assistant Professor of Philosophy.

CORNELIS WILHELMUS ONNEWEER, B.A., M.A., University of Utrecht (Netherlands); Ph.D., Wayne State University. Assistant Professor of Mathematics.

LeROY IGNACIO ORTIZ, B.A., College of Santa Fe; M.A., University of New Mexico. Lecturer in Elementary Education.

[7] **OLIVER ORTIZ,** B.A., M.A., New Mexico Highlands University. Instructor in Guidance (Part-time)

CELIA SILVERMAN OSEASOHN, B.S., M.S., F.P. Bolton School of Nursing, Western Reserve University. Associate Professor of Nursing.

ROBERT OSEASOHN, B.S., Tufts College; M.D., Long Island College of Medicine. Professor of Community Medicine, Chairman of the Department of Community Medicine, Professor of Medicine.

JOSEPH FRANK OSER, JR., A.B., Kent State University; M.D., Ohio State University. Instructor in Medicine.

GERALD DENNIS OTIS, B.A., University of Minnesota; M.A., Ph.D., University of Arizona. Assistant Professor of Psychiatry (Psychology).

LIDA VERDI OTIS, B.A., Hunter College; M.A., University of Arizona. Lecturer in Neurology.

LEWIS MARVIN OVERTON, B.A., Duke University; M.D., University of Maryland; M.S. in Orthopaedics, University of Minnesota. Associate Professor of Orthopaedics.

CULLEN BRYANT OWENS, B.A., Berea College; M.S., Northwestern University; Ph.D., Cornell University. Associate Professor of Speech Communication.

CARL ERICH PAAK, B.A.E., School of the Art Institute of Chicago; M.A., Ohio State University. Professor of Art.

ELIZABETH PAAK, B.S., University of Wisconsin; M.A., University of New Mexico. Lecturer in Special Education (Part-time).

EMELINA DURAN PACHECO, B.A., M.A., New Mexico Highlands University. Lecturer in Elementary Education.

DARWIN LYNN PALMER, A.B., Oberlin College; M.A., Columbia University; M.D., New York University Medical School. Associate Professor of Medicine.

EUGENE CHARLES PALMER, B.S., Tennessee Technological University; Ph.D., Vanderbilt University. Assistant Professor of Pharmacology, Assistant Professor of Anatomy.

ELEFTHERIOS PAUL PAPADOPOULOS, B.Sc., University of Thessaloniki (Greece); Ph.D., University of Kansas. Associate Professor of Chemistry.

[2] **FRANK EDWARD PAPCSY,** B.S., Upsala College; M.A., Ph.D., New York University, F.A.C.S.M. Associate Professor of Physical Education and Special Education, Director of Therapeutic Programs.

ALFRED LEROY PARKER, B.S., M.S., Oklahoma State University; Ph.D., Ohio State University. Associate Professor of Economics.

THEODORE PARNALL, A.B., University of Michigan; Diplome d'Etudes, University of Paris; J.D., University of New Mexico. Assistant Professor of Law.

PRAMOD KUMAR PATHAK, B.Sc., M.Sc., Lucknow University (India); Ph.D., Indian Statistical Institute. Associate Professor of Mathematics.

MARY KAY PATINO, B.A., Western Michigan University; M.Ed., Louisiana State University. Assistant Professor of Special Education.

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[2] On sabbatical leave first semester.

[7] First semester only.

[8] On sabbatical leave second semester.

[18] **CALVIN CLYDE PATTERSON,** B.E.C.E., M.C.E., Johns Hopkins University; Ph.D., University of Texas. Associate Professor of Civil Engineering.

GLENN TAPLIN PEAKE, B.A., M.D., University of Kansas. Assistant Professor of Medicine, Assistant Professor of Pediatrics.

FRANCES JEAN PELOZA, B.S.N., University of Pittsburgh; M.S., University of Colorado. Instructor in Nursing.

HUGO GABRIEL PENA, B.S., National School of Agriculture (Peru); M.S., Ph.D., Purdue University. Instructor in Radiology (Radiobiology).

[7] **CHARLES MARK PERCIVAL,** B.E.S., M.S., Brigham Young University; Ph.D., University of California. Adjunct Professor of Mechanical Engineering.

[7] **OLIVE BALLOU PERKINS,** A.B., M.A., University of Northern Colorado. Instructor in Library Science, College of Education (Part-time).

STEPHEN RUDOLPH PERLS, B.A., Antioch College; M.A., University of Chicago; Ed.D., University of Oregon. Assistant Professor of Psychiatry.

ROGER NICHOLAS PESCH, M.D., Université de Montpellier, France. Assistant Professor of Neurology (Rehabilitation Medicine).

EDWARD TURBERVILLE PETER, B.S., University of Alabama; M.D., Medical College of Alabama; Ph.D., University of Minnesota. Professor of Surgery, Chairman of the Department of Surgery.

GEORGE FREDERICK PETERS, B.A., M.A., Ph.D., Stanford University. Assistant Professor of Modern and Classical Languages (German).

WILLIAM STANLEY PETERS, B.A., Dartmouth College; M.B.A., Ph.D., University of Pennsylvania. Professor of Business and Administrative Sciences.

[8] **DANIEL PAUL PETERSEN,** B.M.E., M.S.M.E., Massachusetts Institute of Technology; D.E.S., Rensselaer Polytechnic Institute of Connecticut. Associate Professor of Electrical Engineering and Computer Science.

ALAN WINSTON PETERSON, A.B., University of California; M.S., Ph.D., University of New Mexico. Associate Professor of Astronomy.

BRUCE RICHARD PETERSON, B.S., M.S., Utah State University. Assistant Professor of Electrical Engineering and Computer Science.

JEANNE CAROLYN PETERSON, B.A., Washington State University; M.A., Teachers College, Columbia University. Lecturer in Elementary Education.

KAREN PETERSON, B.A., M.A., University of New Mexico. Clinical Supervisor and Lecturer in Speech Pathology.

[8] **KENNETH G. PETERSON,** B.A., University of New Mexico. Lecturer in General Studies (Part-time).

PHILIP ALBERT PETERSON, B.A., Central Washington State College; M.A., New York University. Assistant Professor of Art Education.

[3] **GEORGE THOMAS PETROL,** B.S., Albright College; M.A., University of New Mexico. Associate Professor of Physical Education.

PAUL VERNON PETTY, B.S.E., Arkansas State Teachers College; M.A., Duke University; Ph.D., University of Texas. Professor of Educational Administration.

[8] **RICHARD LOUIS PFAFF,** Lecturer in Journalism (Part-time).

[2] **THOMAS HALL PHILIPS,** A.B., A.M., Harvard University. Professor of Music.

DAVID FRANKLIN PHILLIPS, B.A., M.A., Ph.D., University of Texas. Instructor in Mathematics and Statistics (Part-time).

[8] **ROY GLENWOOD PICKETT,** B.A., M.A., Ph.D., State University of Iowa. Associate Professor of English.

MICHEL LOUIS ROGER PILLET, D.P.L.G., Ecole Nationale Superieure des Beaux-Arts; M.Arch., University of California (Berkeley). Associate Professor of Architecture.

MOLLY LAW PINSINCE, B.A., University of New Hampshire; M.Soc.Wk., Michigan State University. Instructor in Psychiatry (Social Work).

CHARLOTTE LEWIS PIPER, B.A., Baker University; M.A., University of New Mexico. Associate Professor of Physical Education.

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[2] On sabbatical leave first semester.
[3] On sabbatical leave second semester.
[7] First semester only.
[8] Second semester only.
[18] Resigned end of Semester I.

PAUL ARNOLD POHLAND, B.S., Concordia Teachers College; M.A., Ph.D., Washington University. Assistant Professor of Educational Administration.

MICHAEL POLLAY, B.S., M.D., University of Wisconsin; M.S., University of Colorado. Professor of Surgery, Assistant Professor of Physiology.

[7] **THOMAS LAFAYETTE POPEJOY, JR.,** B.B.A., J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

BRUCE EARL PORCH, B.S., M.Ed., Wayne State University; Ph.D., Stanford University. Associate Professor of Speech (Part-time), Associate Professor of Neurology (Rehabilitation Medicine).

EUGENE RUSSELL PORTER, B.S.Ed., University of Cincinnati; M.P.H., University of Michigan. Adjunct Assistant Professor of Health Education.

JONATHAN PORTER, A.B., Harvard University; M.A., University of Colorado, Ph.D., University of California (Berkeley). Assistant Professor of History.

LOREN DAVID POTTER, B.S., North Dakota State Agricultural College; M.A., Oberlin College; Ph.D., University of Minnesota. Professor of Biology, Chairman of the Department of Biology.

MARY JANE POWER, A.B., Regis College; A.M., Ph.D., University of Wisconsin. Assistant Professor of English.

MARY CAROLINE POZORSKI, B.S.N., University of Wisconsin; M.S.N., Case Western Reserve University. Nursing Education Specialist, New Mexico Regional Medical Program; Assistant Professor of Nursing.

LOUIS ELLIOT PRICE, A.B., University of California at Los Angeles; M.A., Ph.D., State University of Iowa. Associate Professor of Psychology.

GEORGE TAYLOR PRIGMORE, B.S., B.A., M.A., Texas Technological University; Ed.D., University of New Mexico. Assistant to the Dean, College of Education; Assistant Professor of Secondary Education.

WILLIAM CHARLES PRIMM, B.A., M.A., Central Michigan University; J.D., Wayne State University. Visiting Assistant Professor of Speech Communication, Director of Forensics.

DONALD VICTOR PRIOLA, B.S., Ph.D., Loyola University. Associate Professor of Physiology.

PETER PROUSE, B.A., Princeton University; M.A., University of New Mexico; Ph.D., Northwestern University. Professor of Secondary Education.

STEVEN ARTHUR PRUESS, B.S., Iowa State University; M.S., Ph.D., Purdue University. Assistant Professor of Mathematics.

NOEL HARVEY PUGACH, B.A., Brooklyn College; M.A., Ph.D., University of Wisconsin. Assistant Professor of History.

CLIFFORD RAY QUALLS, B.A., Long Beach State College; M.A., Ph.D., University of California (Riverside). Assistant Professor of Mathematics.

ALEX THADDEUS QUENK, B.A., University of Connecticut; A.M., University of Michigan; Ph.D., University of California (Berkeley). Assistant Professor of Psychiatry (Psychology), Assistant Professor of Psychology.

NAOMI LITT QUENK, B.A., M.A., Brooklyn College; Ph.D., University of California. Adjunct Assistant Professor of Community Medicine.

GEORGE HEINZ QUENTIN, B.Ch.E., Rensselaer Polytechnic Institute; M.S.Ch.E., Ph.D., Iowa State University. Assistant Professor of Chemical Engineering.

HOWARD NEIL RABINOWITZ, B.A., Swarthmore College; M.A., University of Chicago. Instructor in History.

GEORGE G. RAKOLTA, M.D., University of Michigan. Assistant Professor of Orthopaedics.

DARREL ROBERT RANDALL, B.F.A., University of California. Lecturer in Music (Part-time).

ALBERT RATNER, B.S., Brooklyn College; M.S., Ph.D., Michigan State University. Assistant Professor of Physiology.

WILLIAM PATRICK REED, A.B., Harvard College; M.D., Harvard School of Medicine. Assistant Professor of Medicine.

VICTOR H. REGENER, Dr.-Ing., Technische Hochschule, Stuttgart. Research Professor of Physics, Chairman of the Department of Physics and Astronomy.

ROBERT RICHARD REHDER, A.B., DePauw University; M.B.A., Indiana University; Ph.D., Stanford University. Dean of the School of Business and Administrative Sciences, Professor of Business and Administrative Sciences.

[7] First semester only.

RICHARD ALAN REID, B.S.M.E., Case Western Reserve University; M.B.A., Ph.D., Ohio State University. Assistant Professor of Business and Administrative Sciences.

BRENDA BOUSFIELD REMLEY, B.A., Earlham College; M.A., Ph.D., Indiana University. Lecturer in English.

DAVID A. REMLEY, A.B., Wabash College; A.M.T., Harvard University; Ph.D., Indiana University. Assistant Professor of English.

PAUL EMIL RESTA, B.S., Ph.D., Arizona State University; M.A., Washington State University. Assistant Dean for Special Projects, College of Education; Associate Professor of Educational Foundations.

VIRGINIA REVA, B.A., St. Mary's College, Notre Dame; M.A., University of Michigan. Professor of Business Education, Department of Secondary Education (Part-time).

[27] **EDDY GWEN REVELEY,** B.S., University of Texas; M.L.S., Texas Woman's University. Assistant Science and Engineering Librarian, Instructor in Librarianship.

PHILIP REYES, B.S., M.S., Ph.D., University of California (Davis). Assistant Professor of Biochemistry.

[7] **CHARLES PHILIP REYNOLDS,** B.A., J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

J. STANLEY RHINE, B.A., M.A., Ph.D., University of Colorado. Assistant Professor of Anthropology.

WILLIAM EARL RHOADS, B.Mus., M.Mus., University of Michigan. Professor of Music.

HAROLD V. RHODES, B.A., M.A., University of Wichita; Ph.D., University of Arizona. Associate Professor of Political Science.

[2] **JOHN MARSHALL RHODES,** B.A., University of California at Los Angeles; M.A., Los Angeles State College; Ph.D., University of Southern California. Professor of Psychology, Professor of Neurology (Neurobiology).

RAYMOND CLAYTON RICH, B.A., University of Chicago. Assistant Professor of English.

[7] **SIGNE MARGRETHE RICH,** B.A., Concordia College; M.A., University of Chicago. Instructor in English (Part-time).

[1] **CHARLES GILBERT RICHARDS,** B.S.E., M.S.E., Ph.D., University of Michigan. Associate Professor of Mechanical Engineering.

HAROLD ORVILLE RIED, B.A., Nebraska Wesleyan University; M.A., Ph.D., University of Nebraska. Professor of Speech Communication.

MARVIN LeROY RIEDESEL, B.A., Cornell College; M.S., Ph.D., State University of Iowa. Professor of Biology.

[8] **BRUCE JOSEPH RIGSBY,** B.A., University of Louisville; Ph.D., University of Oregon. Associate Professor of Anthropology.

[7] **JAMES TURNER ROACH,** B.A., J.D., University of New Mexico. Clinical Lecturer in Law (Part-time).

ADELBERT LEE ROARK, B.S., M.A., University of Kentucky; Ph.D., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences (Part-time).

RICHARD GARDNER ROBBINS, JR., B.A., Williams College; M.A., Ph.D., Columbia University. Assistant Professor of History.

ELAINE ROBERT, Abitur, Frauenoberschule, Vienna. Instructor in Modern and Classical Languages (Part-time).

GEORGE ROBERT, Student of Edward Steuermann and Anton von Webern. Professor of Music.

JANE ELIZABETH ROBERTS, B.S., Southeast Missouri State College; M.A., University of New Mexico. Instructor in Speech Communication (Part-time).

WILLIAM HOLLOWAY ROBERTS, A.B., Williams College; M.A., Université d'Aix-Marseille (France); Ph.D., University of Wisconsin. Professor of Modern and Classical Languages, Chairman of the Department of Modern and Classical Languages.

F. NORMAN ROCHE, B.P.E., De Paul University. Adjunct Lecturer in Physical Education.

HOWARD DAVID RODEE, B.A., M.A., Ohio State University. Lecturer in Art.

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[1] On sabbatical leave for year.
[2] On sabbatical leave first semester.
[8] On sabbatical leave second semester.
[7] First semester only.
[27] Starting 9/1/71.

RICHARD M. RODRIGUEZ, B.A.Ed., M.A.Ed., Ph.D., Arizona State University. Assistant Professor of Guidance.

JANET ROEBUCK, B.A., University of Wales; Ph.D., University of London. Assistant Professor of History.

SAMUEL ROLL, B.A., Louisiana State University; M.S., Ph.D., Pennsylvania State University. Assistant Professor of Psychology.

LEO ROMERO, B.A., University of New Mexico; M.S.W., University of California at Los Angeles. Assistant Professor of Psychiatry (Social Work).

[25] **LOUIS A. ROSASCO,** B.E., State College of New York; M.A., Ed.D., New York University. Professor of Educational Foundations, Chairman of the Department of Educational Foundations.

[22] **ESTELLE HELENE ROSENBLUM,** B.S., Wayne State University. Instructor in Nursing.

[2] **SIDNEY ROSENBLUM,** B.A., Drew University; M.A., Ohio State University; Ph.D., State University of Iowa. Professor of Psychology.

STEVEN I. ROSENCRANS, B.S., Ph.D., Massachusetts Institute of Technology. Visiting Assistant Professor of Mathematics and Statistics (Part-time).

LAWRENCE BERNARD ROSENFELD, B.A., Hunter College; M.A., University of Iowa; Ph.D., Pennsylvania State University. Assistant Professor of Speech Communication.

ALBERT H. ROSENTHAL, B.A., University of Denver; M.A., University of Minnesota; Ph.D., Harvard University. Director, Division of Public Administration; Professor of Political Science.

ABRAHAM ROSENZWEIG, B.S., University of Pennsylvania; Ph.D., Bryn Mawr College. Professor of Geology.

DAPHNE WARD ROSENZWEIG, A.B., M.A., Columbia University. Lecturer in Art (Part-time).

MICHAEL L. ROSENZWEIG, A.B., Ph.D., University of Pennsylvania. Associate Professor of Biology.

DOMINICK FERRANTELLI ROSSI, B.A., University of California at Los Angeles; M.A., San Francisco State College; M.A., University of New Mexico. Clinical Supervisor and Lecturer in Audiology, Department of Speech Communication.

GUNTHER ERIC ROTHENBERG, B.A., Ph.D., University of Illinois; M.A., University of Chicago. Professor of History.

[31] **DIETOLF ROTHFUSS,** M.D., University of Bonn (West Germany). Assistant Professor of Pathology.

DONALD DENNIS ROYER, B.S., University of Albuquerque; M.B.A., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences (Part-time).

BRITTON KENNETH RUEBUSH, B.A., Stanford University; M.S., Ph.D., Yale University. Associate Professor of Psychiatry and Associate Professor of Psychology.

WILLIAM BARTON RUNGE, B.S., M.Ed., Colorado State University; Ed.D., University of Southern California. Professor of Secondary Education.

G. MARTIN RUOSS, A.B., Muhlenberg College; B.D., S.T.M., Lutheran Theological Seminary; M.A., University of Denver. Special Collections Librarian, Assistant Professor of Librarianship.

MARILYN LOUISE RUOSS, B.S., Elizabethtown College; M.A., University of Denver. Cataloger, Instructor in Librarianship.

JOHN LEONARD RYAN, A.B., State University of New York (Albany). Instructor in Italian (Part-time).

WILLIAM JOHN RYAN, B.S., College at Geneseo, State University of New York; M.S., Ph.D., Purdue University. Assistant Professor of Speech Communication.

[31] **BERNARD FRANCIS SAALFELD,** B.S., M.A., University of Oregon. Assistant Professor of Political Science.

JOHN HARRIS SAIKI, B.A., University of North Dakota; M.D., McGill University. Assistant Professor of Medicine.

LUCILLE SUZANNE BACA SAIS, Associate of Science Degree in Dental Hygiene, University of New Mexico. Instructor in Dental Programs. (Part-time).

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[2] On sabbatical leave first semester.
[22] Starting second semester.
[25] Starting 2/1/72.
[31] Resigned 12/31/71.

CHARLOTTE GAYLE SAMPLEY, B.A., M.A., Eastern New Mexico University. Instructor in Business Education, Department of Secondary Education.

[7] **RAYMOND GILBERT SANCHEZ,** B.A., J.D., University of New Mexico. Lecturer in Law (Part-time).

LYNN A. SAXTON, B.S., University of Albuquerque. Director of the Laboratory Sciences Program, Regional Medical Program; Lecturer in Pathology.

JOSEPH VICTOR SCALETTI, B.A., M.S., University of Connecticut; Ph.D., Cornell University. Professor of Microbiology.

TERENCE JOSEPH SCALLEN, B.S., College of St. Thomas; M.D., Ph.D., University of Minnesota. Associate Professor of Biochemistry.

[7] **WALTER PAUL SCHIMMEL, JR.,** B.S.M.E., Purdue University; M.S.M.E., Ph.D., University of Notre Dame. Adjunct Professor of Mechanical Engineering.

DON PAUL SCHLEGEL, B.Arch., University of Cincinnati; M.Arch., Massachusetts Institute of Technology. Professor of Architecture, Chairman of the Department of Architecture.

[8] **KENDALL OLIVER SCHLENKER,** B.A., Eastern New Mexico University; J.D., University of New Mexico; LL.M. in Tax, New York University. Visiting Lecturer in Business and Administrative Sciences (Part-time).

PAUL FREDERIC SCHMIDT, A.B., University of Rochester; Ph.D., Yale University. Professor of Philosophy, Chairman of the Department of Philosophy.

MORTON GERALD SCHOENFELD, Juilliard Graduate School; B.Mus., Rollins College; M.Mus., University of Wisconsin. Professor of Music.

ELMER ARTHUR SCHOLER, B.S., M.S., Ph.D., University of Illinois. Professor of Recreation; Assistant Chairman for Recreation, Department of Health, Physical Education, and Recreation; Director of the Center for Leisure and Recreation (ISRAD).

WALTER GEORG SCHREIBER, B.A., Hobart College; M.F.A., Yale University. Technical Director, Popejoy Hall; Assistant Professor of Dramatic Art.

HOWARD LINN SCHREYER, B.Sc., University of Alberta; M.S., Ph.D., University of Michigan. Associate Professor of Mechanical Engineering.

FLORENCE MARGARET SCHROEDER, B.S., Iowa State College; M.A., Teachers College, Columbia University; Ph.D., New York University. Professor of Home Economics.

GEORGE FREDERICK SCHUELER, A.B., Stanford University; M.A., University of California (Berkeley). Assistant Professor of Philosophy.

TIMOTHY STEPHEN SCHUSTER, A.B., Harvard College; M.D., Columbia University College of Physicians and Surgeons. Assistant Professor of Psychiatry.

MARTHA SUE SCHWEBACH, Diploma, Dominican School of Nursing. Lecturer in Community Medicine.

KARL H. SCHWERIN, B.A., University of California; Ph.D., University of California at Los Angeles. Associate Professor of Anthropology.

[35] **NEIL RAYMOND SCOTT,** B.S., Kansas State University; M.D., Duke University. Instructor in Psychiatry.

[2] **JAMES MARSHALL SEBRING,** B.A., Indiana University; Ph.D., University of California (Berkeley). Assistant Professor of Anthropology.

RICHARD JOSEPH SEI, D.D.S., Creighton University. Lecturer in Dental Programs (Part-time).

[8] **ARMOND HAROLD SEIDLER,** B.S., M.S., Ph.D., University of Illinois; F.A.C.S.M. Professor of Physical Education.

WESLEY THOMAS SELBY, B.F.A., M.M., University of New Mexico; M.M., University of Colorado. Assistant Professor of Music.

[1] **ROBERT ALAN SENESCU,** B.A., Columbia College; M.D., Boston University Medical School. Professor of Psychiatry, Chairman of the Department of Psychiatry.

RUDOLFO GAITAN SERRANO, B.A., San Jose State College; M.A., University of the Pacific. Assistant Professor of Educational Foundations.

WILLIAM MAC SEYMOUR, B.Mus.Ed., Music and Arts College; Ed.D., Washington University. Associate Professor of Music, Chairman of the Department of Music.

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[1] On sabbatical leave for year.
[2] On sabbatical leave first semester.
[8] On sabbatical leave second semester.
[7] First semester only.
[8] Second semester only.
[35] Starting 1/1/72.

MOHAMMED SHAFI, M.S., University of Peshawar; M.A., University of New Mexico; M.S., Ph.D., Georgetown University. Lecturer in Physics (Part-time).

[7] **LAWRENCE FRED SHAMPINE,** B.S., Ph.D., California Institute of Technology. Adjunct Professor of Mathematics.

ROGER SHANNON, B.A., Ph.D., University of Kentucky. Assistant Professor of Physiology.

[32] **MALCOLM PITMAN SHARP,** B.A., Amherst College; M.A., University of Wisconsin; LL.B., S.J.D., Harvard Law School. Lecturer in Law (Part-time).

NESBY WAYNE SHARP, B.F.A., M.Mus., University of New Mexico. Lecturer in Music (Part-time).

WILLIAM MASON SHIMER, B.S., Syracuse University; M.A., University of New Mexico. Assistant Professor of Speech Communication (Telecommunication).

WILLIAM ANDREW SHINNICK, B.S., Northwestern University; M.S., Massachusetts Institute of Technology. Director of the Technology Application Center (ISRAD), Assistant Professor of Business and Administrative Sciences.

JON DURBIN SHOOP, B.S., M.D., Tufts University. Associate Professor of Radiology.

JERRY MARK SHUCK, B.S., M.D., D.Sc., University of Cincinnati. Associate Professor of Surgery, Head of the Burn and Trauma Unit.

ROGER WALLACE SHUGG, A.B., A.M., Ph.D., Princeton University. Director of the University Press, Professor of History.

[3] **ROBERT JUDD SICKELS,** B.A., M.A., University of Chicago; Ph.D., Johns Hopkins University. Associate Professor of Political Science.

CHARLES TROY SIEMERS, B.S., Oregon State University; Ph.D., Indiana University. Assistant Professor of Geology.

ERNEST R. SIMON, M.D., Harvard Medical School. Professor of Medicine.

JUDITH LEAH SIMON, B.A., Western Reserve University; M.D., University of Cincinnati College of Medicine. Assistant Professor of Radiology.

KATHERINE GAUSS SIMONS, B.A., Grinnell College; M.A., Columbia University. Professor of English.

DONALD GRANT SIMONSON, B.S.C.E., University of Illinois; M.S. Ind. Adm., Purdue University. Assistant Professor of Business and Administrative Sciences.

[7] **DONALD GEORGE SIMS,** B.A., University of Colorado; M.S., Ph.D., University of Pittsburgh. Adjunct Assistant Professor of Audiology, Department of Speech Communication.

CAROLYN ANN SIRKEL, B.F.A., University of New Mexico; M.F.A., San Jose State College. Assistant Professor of Dramatic Art.

DONALD EMANUEL SKABELUND, B.S., Utah State University; Ph.D., University of Utah. Associate Professor of History.

VICTOR J. SKOGLUND, B.S., M.S., University of California; D. Eng., Yale University. Professor of Mechanical Engineering.

DANIEL MICHAEL SLATE, B.S., M.A., Ph.D., University of Washington. Professor of Business and Administrative Sciences.

GERALD MARC SLAVIN, B.A., San Francisco State College; M.A., University of California at Berkeley; Ph.D., University of New Mexico. Director of International Programs and Services, Lecturer in Portuguese and Spanish.

ELLA MAY SMALL, B.A., Texas Wesleyan College; M.A., Texas State College for Women; Ed.D., University of California at Los Angeles. Professor of Health Education; Assistant Chairman for Health Education, Department of Health, Physical Education, and Recreation.

DANIEL EDWARD SMITH, B.A., University of New Mexico; M.D., University of Colorado School of Medicine. Associate Professor of Surgery.

EDGAR BENTON SMITH, B.A., University of Houston; M.D., Baylor College of Medicine; Diploma in Clinical Medicine of the Tropics, University of London. Associate Professor of Medicine, Director of the Division of Dermatology.

GEORGE WINSTON SMITH, B.A., M.A., University of Illinois; Ph.D., University of Wisconsin. Professor of History.

LESLIE FRANK SMITH, B.Sc., Ph.D., University of London. Associate Professor of Biochemistry.

[2] **MARY ELIZABETH SMITH,** B.A., University of Michigan; M.A., Columbia University; Ph.D., Yale University. Associate Professor of Art.

---

[2] On sabbatical leave first semester.
[3] On sabbatical leave second semester.
[7] First semester only.
[32] Retired end of Semester I.

MARY MARGARET SMITH, B.S., M.S., Montana State University. Assistant Professor of Home Economics.

PATRICIA CLARK SMITH, B.A., Smith College; M.A., Ph.D., Yale University. Visiting Assistant Professor of English.

SAMUEL DAVID SMITH, Studied in Africa, Orient, Near East, and United States. Professor of Art.

SHERMAN EVERETT SMITH, B.S., South Dakota School of Mines and Technology; Ph.D., Ohio State University. Vice President for Administration and Development, Professor of Chemistry.

WARREN SALE SMITH, JR., B.A., Wesleyan University; M.A., Indiana University; Ph.D., Yale University. Assistant Professor of Modern and Classical Languages.

PAUL ANTHONY SMYER, JR., B.S., M.B.A., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences.

ROBERT EDWIN SNAPP, B.A., M.A., University of New Mexico; M.F.A., Yale University. Professor of Dramatic Art.

[3] **RODMAN ELDREDGE SNEAD,** B.A., University of Virginia; M.A., Syracuse University; Ph.D., Louisiana State University. Professor of Geography.

CHARLES ELIOT SNELL, B.A., University of New Mexico; M.S., University of Southern California. Assistant Serials Librarian, Instructor in Librarianship.

EDNELL MARGARET SNELL, B.S., B.Ed., M.A., Washington State University; Ed.D., Teachers College, Columbia University. Professor of Home Economics, Chairman of the Department of Home Economics.

RONALD DAVID SNELL, B.S., M.S., Indiana State University. Assistant Professor of Speech Communication.

[3] **JANE SNOW,** B.Mus., M.Mus., Cincinnati College of Music. Associate Professor of Music.

ROSS LELAND SNYDER, B.A., Swarthmore College; B.D., Yale Divinity School; M.D., Yale Medical School. Assistant Professor of Psychiatry, Assistant Professor of Pediatrics.

RUSSELL DEWEY SNYDER, B.A., Swarthmore College; M.D., University of Pennsylvania. Associate Professor of Pediatrics and Associate Professor of Neurology.

SIDNEY SOLOMON, B.S., University of Massachusetts; Ph.D., University of Chicago. Professor of Physiology, Chairman of the Department of Physiology.

ROGER LOUIS SOPHER, B.S., St. Mary's College of California; M.D., Johns Hopkins University. Assistant Professor of Pathology,[24] Acting Chairman of the Department of Pathology.

JAY BERTRAM SORENSON, B.S., M.A., Russian Institute Certificate, Ph.D., Columbia University. Professor of Political Science.

HAROLD DEAN SOUTHWARD, B.S., West Texas State College; M.A., Ph.D., University of Texas. Director of the Bureau of Engineering Research, Professor of Electrical Engineering and Computer Science.

MARIE FEARING SOVEREIGN, B.A., Houghton College; M.A., University of New Mexico; Ph.D., University of Texas. Instructor in Modern and Classical Languages (Part-time).

CHARLES TERRY SPALDING, B.S., Florence State College; Ph.D., Vanderbilt University. Assistant Professor of Pharmacology.

DALE SPARKS, B.A., B.S., Iowa State University. Associate Professor of Electrical Engineering and Computer Science.

JAKE WILTON SPIDLE, JR., B.A., M.A., Vanderbilt University. Assistant Professor of History.

[2,6] **BERNARD SPOLSKY,** B.A., M.A., Victoria University of Wellington (New Zealand); Ph.D., Universite de Montreal. Associate Professor of Linguistics and of Elementary Education.

[4] **ELLEN SPOLSKY,** B.A., McGill University; M.A., Ph.D., Indiana University. Assistant Professor of English.

[8] **CRAIG OWEN SPREACKER,** B.S., University of New Mexico. Instructor in Industrial Education, Department of Secondary Education (Part-time).

[3] **GEORGE PETER SPRINGER,** A.B., M.A.T., M.A., Ph.D., Harvard University. Vice President for Research, Dean of the Graduate School, Professor of Anthropology.

[4] **JAMES NORMAN SPUHLER,** B.A., University of New Mexico; M.A., Ph.D., Harvard University. Leslie Spier Professor of Anthropology.

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[2] On sabbatical leave first semester.
[3] On sabbatical leave second semester.
[4] On leave for the year.
[6] On leave second semester.
[8] Second semester only.
[24] 6/1/71-11/30/71.

JAMES JOSEPH SRUBEK, B.S., Pennsylvania State University; M.A., University of New Mexico. Assistant Professor of Art Education.

KENNETH HOTTENSTEIN STAHL, B.A., Carthage College; B.S., M.S., State University of Iowa; Ph.D., University of Maryland. Professor of Pharmacy (Pharmaceutical Chemistry).

JIMMY CLAYTON STANDEFER, B.A., Ph.D. University of Kansas. Assistant Professor of Pathology.

PHILIP DEVON STANSIEFER, B.S., Southwestern College; M.S., Purdue University; M.D., University of Kansas. Assistant Professor of Pathology.

STANLEY N. STARK, M.D., University of Colorado. Adjunct Assistant Professor of Pediatrics.

PETER MICHAEL LYLE STARR, A.B., Colgate University; M.A.L.S., George Peabody College for Teachers. Circulation Librarian, Assistant Professor of Librarianship.

SAMUEL DOW STEARNS, B.S.E.E., Stanford University; M.S., Ph.D., University of New Mexico. Adjunct Professor of Electrical Engineering and Computer Science.

CHARLIE RUPERT STEEN III, B.A., University of New Mexico; Ph.D., University of California (Los Angeles). Assistant Professor of History.

ARTHUR STEGER, B.A., University of Pennsylvania; M.A., Ph.D., University of California. Professor of Mathematics.

FRANK XAVIER STEGGERT, B.S., Ed.D., Loyola University; M.A., Northwestern University. Visiting Associate Professor of Public Administration.

JULIA ALMYRA STEPHENS, B.S., University of Kansas. Lecturer in Neurology.

JOANNE WINIFRED STERLING, B.A., Chatham College; M.A., Ph.D., University of New Mexico. Assistant Professor of Psychiatry (Rehabilitation).

ELEANOR McGREEVEY STEWART, B.A., Marietta College; M.A., University of Illinois. Instructor in Speech Communication (Part-time).

[27] **WILLIAM DUENO STIEHM,** B.S., University of Wisconsin; M.D., Columbia University. Assistant Professor of Radiology.

[18] **STEPHEN DURBIN STOLLER,** A.B., Harvard University; Ph.D., University of California (Berkeley). Assistant Professor of Business and Administrative Sciences.

ALEXANDER PAUL STONE, B.S., Columbia University; M.S., Newark College; Ph.D., University of Illinois. Associate Professor of Mathematics.

ROBERT SAMUEL STONE, B.A., Brooklyn College; M.D., Downstate Medical Center, State University of New York. Vice President for Health Sciences, Dean of the School of Medicine; Professor of Pathology.

GEORGE C. STOUMBIS, B.S., Minot State College; M.Ed., Ed.D., University of Oregon. Administration and Management Specialist/Chief of Party, Brazil Project, College of Education; Associate Professor of Secondary Education.

NATHAN ROBERT STRAHL, B.S., M.S., University of Pittsburgh; Ph.D., State University of New York at Buffalo. Assistant Professor of Pharmacy (Pharmaceutics).

DAVID STRATMAN, LL.B., University of Cuza (Romania); Ph.D., Boston University. Assistant Professor of Sociology.

[4] **HARRY PAUL STUMPF,** B.A., University of Colorado; M.A., George Washington University; Ph.D., Northwestern University. Associate Professor of Political Science.

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DONALD DAVID SULLIVAN, A.B., A.M., University of Chicago; Ph.D., University of Colorado. Assistant Professor of History.

[7] **JONATHAN BROWN SUTIN,** B.A., University of Colorado; J.D., University of New Mexico. Lecturer in Law (Part-time).

ZEE M. SWEARENGIN, B.A., Oklahoma College of Liberal Arts; M.A., California State College at Los Angeles. Instructor in Special Education (Part-time).

[1] **DEREK BERTRAM SWINSON,** B.Sc., Queen's University, Belfast; M.Sc., Ph.D., University of Alberta. Associate Professor of Physics.

FERENC MORTON SZASZ, B.A., Ohio Wesleyan University; Ph.D., University of Rochester. Assistant Professor of History.

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[1] On sabbatical leave for year.
[4] On leave for the year.
[7] First semester only.
[18] Resigned end of Semester I.
[27] Starting 9/1/71.

DONALD GEORGE TAILBY, B.A., M.A., Ph.D., Rutgers University. Associate Professor of Economics.

YOSHIMI TAKEDA, B.A., Tokyo University of Arts. Adjunct Associate Professor of Music.

AUDREY WOODROW TALLEY, A.B., Murray State University; M.D., University of Tennessee College of Medicine. Assistant Professor of Surgery.

ROBERT EDWIN TAPSCOTT, B.S., University of Colorado; Ph.D., University of Illinois. Assistant Professor of Chemistry.

WALTON ROBERT LAWSON TAYLOR, B.S., Sacramento State University. Assistant Professor of Business and Administrative Sciences.

ERNEST WARNOCK TEDLOCK, B.A., M.A., University of Missouri; Ph.D., University of Southern California. Professor of English.

[4] **PAUL THORLEIF THERKILDSEN,** B.S., Bradley University; M.S., Ph.D., University of Colorado. Associate Professor of Economics.

ROY THOMAS, B.Sc., University of Alberta; Ph.D., University of California. Professor of Physics.

PEARL ESTHER THOMPSON, B.S.E., University of Arkansas; M.A., University of New Mexico. Instructor in Special Education (Part-time).

STEPHEN WRIGHT THOMPSON, B.A., M.D., Ohio State University. Associate Professor of Neurology and Associate Professor of Medicine.

WAYNE WALTER THORNBERRY, D.M.D., University of Oregon. Lecturer in Dental Programs (Part-time).

[4] **JAMES LLEWELLYN THORSON,** B.S., in Ed., M.A., University of Nebraska; Ph.D., Cornell University. Associate Professor of English.

MARCIA TILLOTSON, B.A., Radcliffe College; M.A., Ph.D., University of Chicago. Assistant Professor of English.

SEI TOKUDA, B.S., University of Hawaii; Ph.D., University of Washington. Associate Professor of Microbiology.

RICHARD FINN TOMASSON, B.A., Gettysburg College; M.A., University of Illinois; Ph.D., University of Pennsylvania. Professor of Sociology, Chairman of the Department of Sociology.

JACK EDWARD TOMLINS, B.A., M.A., University of New Mexico; M.A., Ph.D., Princeton University. Professor of Modern and Classical Languages.

RICHARD FRANCIS TONIGAN, B.S., M.S., University of Illinois; Ed.D., Columbia University. Director of the Bureau of Educational Planning and Development, Professor of Educational Administration.

[8] **MILTON (MICKEY) A. TOPPINO,** B.A., University of New Mexico. Lecturer in Journalism (Part-time).

ALVIN NEAL TOWNSEND, B.F.A., M.A., University of New Mexico. Assistant Professor of Art Education.

GERALD LEIGH TRAUT, B.S., University of Wisconsin (Milwaukee); M.S., Ph.D., University of New Mexico. Assistant Professor of Biology.

CHESTER COLEMAN TRAVELSTEAD, B.A., Western Kentucky State College; M.Mus., Northwestern University; Ph.D., University of Kentucky. Vice President for Academic Affairs, Professor of Educational Administration.

[8] **FRANK J. TRELEASE,** A.B., LL.B., University of Colorado; J.S.D., University of Wisconsin. Visiting Professor of Law.

DOROTHY WEBB TRESTER, B.S., M.S., Louisiana State University. General Reference Librarian, Assistant Professor of Librarianship.

[8] **GEORGE EMMANUEL TRIANDAFILIDIS,** B.S., Robert College; M.S., Ph.D., University of Illinois. Professor of Civil Engineering and Research Engineer for Civil Engineering Research Facility.

GARY MILLER TROUP, B.A., Miami University; M.D., University of Cincinnati College of Medicine. Associate Professor of Pathology.

GREGORY HORACE TROVATO, Certificate, Baltimore City Hospitals School of Radiologic Technology. Lecturer in Radiology.

HOYT TROWBRIDGE, B.A., M.A., Ph.D., University of Wisconsin. Professor of English.

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[3] On sabbatical leave second semester.

[4] On leave for the year.

[8] Second semester only.

[8] **THOMAS J. TSCHETTER,** B.S., Augustana College; M.B.A., University of South Dakota. Visiting Lecturer in Business and Administrative Sciences (Part-time).

SUSAN BALSLEY TULLY, A.B., M.D., University of California at Los Angeles. Instructor in Pediatrics.

JAMES H. TURNER, B.S., University of Maine; M.S., Ph.D., Clemson University. Assistant Professor of Chemical Engineering.

HOWARD NELSON TUTTLE, B.A., M.A., University of Utah; M.A., Harvard University; Ph.D., Brandeis University. Associate Professor of Philosophy.

PAUL WILLIAM TWEETEN, B.A., M.A., Ph.D., University of Iowa. Associate Professor of Secondary Education.

[7] **LYNN DOLAN TYLER,** B.S.M.E., University of Tulsa; M.S., Ph.D., Oklahoma State University. Adjunct Professor of Mechanical Engineering.

[6] **ANTHONY UGALDE,** B.A., University of Madrid; M.A., Ph.D., Stanford University. Assistant Professor of Sociology.

MARI-LUCI ULIBARRÍ, B.A., New Mexico Highlands University; M.A., University of California at Los Angeles; Ph.D., The University of New Mexico. Assistant Director in Educational Service, Cultural Awareness Center; Assistant Professor of Elementary Education.

SABINE REYES ULIBARRÍ, B.A., M.A., University of New Mexico; Ph.D., University of California at Los Angeles. Professor of Modern and Classical Languages.

JOHN AUGUST ULRICH, B.S., St. Thomas College; Ph.D., University of Minnesota. Professor of Microbiology and Professor of Pathology.

JOHN WADE ULRICH, B.S., M.S., Florida State University; Ph.D., University of Texas. Associate Professor of Mathematics and Computing Science.

LAURA CAMERON ULRICH, B.S., Florida State University; M.A., University of Texas. Instructor in Mathematics and Statistics (Part-time).

MARIO URDANETA, B.A., Certificate of Social Work, M.S.W., University of Puerto Rico. Instructor in Psychiatry (Social Work).

ALBERT EDGAR UTTON, B.A., University of New Mexico; B.A., M.A. (Juris.), Oxford University. Professor of Law, Editor of the **National Resources Journal.**

SHARON ANN VAIRO, B.S.N., Wayne State University; M.S., University of Colorado. Instructor in Nursing.

ARTHUR VALL-SPINOSA, B.A., Whitman College; M.D., University of Washington. Adjunct Assistant Professor of Medicine.

THEODORE NORMAN VAN COTT, B.A., California State College at Long Beach; M.A., Ph.D., University of Washington. Assistant Professor of Economics.

NICHOLAS ERNEST VANDERBORGH, A.B., Hope College; M.A., Ph.D., Southern Illinois University. Associate Professor of Chemistry.

DAVID LEE VANDER JAGT, A.B., Calvin College; Ph.D., Purdue University. Assistant Professor of Chemistry, Assistant Professor of Biochemistry.

RICHARD D. VAN DONGEN, B.S., M.A., Ph.D., University of New Mexico. Assistant Professor of Elementary Education.

[4] **ALBERT WILLIAM VOGEL,** B.A., M.A., University of New Mexico; Ed.D., American University. Associate Professor of Educational Foundations.

BEVERLY LACY SCHOONOVER VOGEL, B.A., University of North Carolina at Greensboro; M.A., University of New Mexico. Assistant Professor of Art Education.

HELMUTH WILHELM VORHERR, M.D., University of Mainz/Rhein (West Germany). Professor of Obstetrics and Gynecology and Professor of Pharmacology.

PETER WALCH, B.A., Swarthmore College; M.F.A., Ph.D., Princeton University. Associate Professor of Art.

[4] **JERROLD L. WALDEN,** A.B., Union College; LL.B., Columbia Law School; J.S.D., Yale University. Professor of Law.

A. EARL WALKER, A.B., M.D., University of Alberta. Visiting Professor of Surgery, (Neurosurgery) (Part-time).

[7] **ROBERT WAYNE WALKER,** A.B., J.D., University of California (Berkeley). Visiting Professor of Law.

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[4] On leave for the year.
[6] On leave second semester.
[7] First semester only.
[8] Second semester only.

ROBERT WILLIS WALKER, A.B., LL.B., West Virginia University; LL.M., Harvard University. Assistant Professor of Law.

FRANCIS JOSEPH WALL, B.S., Sul Ross State College; M.S., University of Colorado; Ph.D., University of Minnesota. Adjunct Assistant Professor of Community Medicine.

JAMES FRANK WALLACE, B.A., M.S., San Francisco State College. Assistant Professor of Recreation.

ROBERT J. WALPOLE, B.S., University of New Mexico; D.D.S., Baylor University. Lecturer in Dental Programs (Part-time).

EDWARD A. WALTERS, B.S., Pacific Lutheran University; Ph.D., University of Minnesota. Assistant Professor of Chemistry.

L. HELEN WALTERS, B.S., Teachers College, Columbia University; M.A., University of Minnesota; Ed.D., Colorado State College. Associate Professor of Elementary Education.

ROBERT CARLTON WALTERS. Lecturer in Architecture (Part-time).

[4] **DONALD SCOTT WARDER,** B.A., University of New Mexico; M.S., Purdue University. Assistant Professor of Recreation.

FREDERICK BOLTON WARNER, B.A., M.A., University of Arkansas; LL.B., University of Colorado; Ph.D., University of Illinois. Associate Professor of English.

CHARLES WILLIAM WARREN, B.Mus.Ed., Northwestern University; M.Mus., University of Southern California; M.A.L.S., Indiana University. Cataloger, Assistant Professor of Librarianship.

ELIZABETH WATERS, Hanya Holm School, New York City; student of the dance with Ruth St. Denis. Assistant Professor of Dance, Department of Music; Associate in Physical Education.

RICHARD S. WATTS, M.D., Wayne University. Assistant Professor of Medicine.

HALENE CLARKE WEAVER, B.S., Western Reserve University; M.A., University of Arizona. Assistant Professor of Elementary Education.

U. WILLIAM WEEKS, B.S., M.S., Iowa State University. Director of Development, Associate Professor of Physical Education.

HENRY P. WEIHOFEN, Ph.B., J.D., J.S.D., University of Chicago. Professor of Law.

GERALD K. WEISS, B.A., St. Olaf College; M.S., Ph.D., University of Illinois. Assistant Professor of Physiology.

STANLEY WEITZNER, B.A., New York University; M.D., University of Geneva, Switzerland. Assistant Professor of Pathology.

ROSEMARIE WELSH, Diplom-Dolmetscher, Heidelberg University; M.A., Middlebury College. Instructor in Modern and Classical Languages.

SHERMAN ALEXANDER WENGERD, B.A., College of Wooster; M.A., Ph.D., Harvard University. Professor of Geology.

FRANCIS CHRISTOPHER WESSLING, JR., B.S., Washington University; M.S., University of New Mexico; Ph.D., University of Minnesota. Assistant Professor of Mechanical Engineering.

DONALD ALLAN WEST, A.B., M.D., University of Kansas. Instructor in Psychiatry.

[30] **CHARLES AUGUSTUS WEYMULLER,** B.Sc., M.D., University of Nebraska. Visiting Professor of Pediatrics.

GLENN ALAN WHAN, B.S., Indiana Institute of Technology; M.S., Montana State University; Ph.D., Carnegie Institute of Technology. Professor of Nuclear Engineering and Chemical Engineering, Chairman of the Department of Nuclear Engineering, Acting Chairman of the Department of Chemical Engineering.

[18] **ROBERT WHANG,** B.S., M.D., St. Louis University. Associate Professor of Medicine.

JAMIE KAY WHEELER, B.S., Eastern New Mexico University; M.D., Baylor University. Assistant Professor of Pathology.

MARY BESS WHIDDEN, B.A., Ph.D., University of Texas; M.A., University of North Carolina. Associate Professor of English.

JULIAN EUGENE WHITE, JR., B.A., Randolph-Macon College; M.A., Ph.D., University of North Carolina. Professor of Modern and Classical Languages.

ROBERT HAROLD WHITE, B.A., M.Ed., Ph.D., University of Arizona. Associate Professor of Secondary Education.

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[4] On leave for the year.

[18] Resigned end of Semester I.

[30] 10/1/71-5/31/72.

HELEN WHITESIDE, B.A., B.S., East Texas State Teachers College; M.A., West Texas State Teachers College; M.A., Ed.D., Teachers College, Columbia University. Education Associate to the Vice President for Student Affairs, Associate Professor of Guidance.

JAMES LOVIC WHITLOW, B.F.A., M.Mus., University of New Mexico. Associate Professor of Music.

BETTY SUBER WHITON, B.A., University of New Mexico. Lecturer in Music (Part-time).

[18] **KENNETH FREDERICK WIEG,** B.B.A., University of Wisconsin; B.D., Northwestern Theological Seminary; M.S., University of Oregon. Counseling Psychologist, Counseling Center; Assistant Professor of Guidance and Special Education.

WILLIAM HASTINGS WIESE, B.A., Yale College; M.D., Harvard Medical School; M.P.H., Harvard School of Public Health. Assistant Professor of Medicine and Assistant Professor of Community Medicine.

GAYNOR CLARKE WILD, B.S., South Dakota School of Mines and Technology; Ph.D., Tulane University. Assistant Professor of Biochemistry.

RICHARD CLARENCE WILDERMUTH, B.M., Manhattan School of Music; M.B.A., Adelphi University. Lecturer in Music (Part-time).

MAURICE WILBERT WILDIN, B.S.M.E., University of Kansas; M.S.M.E., Ph.D., Purdue University. Associate Professor of Mechanical Engineering, Chairman of the Department of Mechanical Engineering.

ARTHUR SCOTT WILKINSON, B.M., M.Mus., University of Arizona. Lecturer in Music (Part-time).

[8] **JACK D. WILLIAMS,** B.A., M.A., University of New Mexico; Ph.D., University of Texas. Instructor in Secondary Education (Part-time).

[33] **MARION L. WILLIAMS,** B.S., Texas A&M University; M.S., University of New Mexico; Ph.D., Oklahoma State University. Adjunct Professor of Electrical Engineering and Computer Science.

RALPH C. WILLIAMS, JR., A.B., M.D., Cornell University. Professor of Medicine, Chairman of the Department of Medicine.

RICHARD HUSTON WILLIAMS, B.S., B.A., Valparaiso University; M.S., Sc.D., University of New Mexico. Associate Professor of Electrical Engineering and Computer Science.

ROSEANN SANDOVAL WILLINK, B.A., New Mexico Highlands University. Instructor in Navajo (Part-time).

GEORGE MILTON WING, B.A., M.S., University of Rochester; Ph.D., Cornell University. Professor of Mathematics.

WALTER WILLIAM WINSLOW, B.S., La Sierra College; M.D., Loma Linda University. Associate Professor of Psychiatry, Director of Bernalillo County Mental Health Center, Acting Chairman of the Department of Psychiatry.

LOTHAR GEORGE WINTER, B.B.A., College of Business Administration, Konigsberg; M.A., Ph.D., University of Freiburg. Professor of Business and Administrative Sciences.

SVEN FREDERICK WINTHER, B.A., Pacific Lutheran College; M.S., Ed.D., University of Oregon. Director of Counseling, Assistant Professor of Guidance.

DAVID MORTEN WOLFE, B.A., M.S., Ph.D., University of Pennsylvania. Assistant Professor of Physics.

LENORE OLIVE WOLFE, B.S., M.A., University of New Mexico. Instructor in Elementary Education.

NATHANIEL WOLLMAN, B.A., Pennsylvania State College; Ph.D., Princeton University. Dean of the College of Arts and Sciences, Professor of Economics.

EVELYN EKARD WONG, A.B., University of Illinois; M.L.S., University of California (Los Angeles). Gift and Exchange Librarian, Instructor in Librarianship.

DOROTHY ARLENE WONSMOS, B.A., St. Olaf College; M.A., George Peabody College for Teachers. Inter-Library Loan Librarian, Assistant Professor of Librarianship.

WILLIAM FRANK WOOD, A.B., Sacramento State College; M.Mus., University of Oregon; D.M.A., Eastman School of Music. Associate Professor of Music.

BEULAH MARIE WOODFIN, B.A., Vanderbilt University; M.S., Ph.D., University of Illinois. Assistant Professor of Biochemistry.

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[8] Second semester only.

[18] Resigned end of Semester I.

[33] 8/30/71-9/20/71.

CHARLES EMMERT WOODHOUSE, B.A., University of Colorado; M.A., Ph.D., University of California. Associate Professor of Sociology.

JOANNE WOODS, A.B., Pomona College; M.S., Ph.D., University of Southern California. Assistant Professor of Elementary Education.

LEE ALBERT WOODWARD, B.S., B.A., M.S., Montana State University; Ph.D., University of Washington. Associate Professor of Geology, Chairman of the Department of Geology.

DON KEITH WORDEN, B.A., Ph.D., Western Michigan University. Assistant Professor of Pediatrics, Assistant Professor of Psychiatry (Psychology), Director of Programs for Children; Assistant Professor of Psychology.

MARIAN NEWMAN WORKS, B.A., Southern Methodist University; M.Ed., Ph.D., University of Oklahoma. Assistant Professor of Special Education.

GENE MERLE WRIGHT, B.A., University of California (Santa Barbara); M.A., Texas Christian University. Adult Basic Education Specialist, Assistant Professor of Educational Foundations.

JAMES BURNELL WRIGHT, B.Mus., M.L.S., University of Oregon. Assistant Fine Arts Librarian, Instructor in Librarianship.

ROBERT D. WRINKLE, B.A., Texas A & I College; M.A., Texas Technological College; Ph.D., University of Arizona. Assistant Professor of Political Science; Assistant Director, Division of Government Research (ISRAD).

JOHN ALBERT YEAKEL, B.S., M.S., Pennsylvania State University; Ph.D., University of Florida; C.P.A. Assistant Professor of Business and Administrative Sciences.

JOSEPH EUGENE YELL, JR., B.F.A., M.F.A., Art Institute of Chicago. Professor of Dramatic Art, Chairman of the Department of Dramatic Art.

SIDNEY SHIH-CHWEN YEN, B.A., Taiwan Normal University; M.L.S., George Peabody College for Teachers. Cataloger, Assistant Professor of Librarianship.

ROBERT WENDELL YOUNG, B.A., University of Illinois; LL.D., University of New Mexico. Visiting Lecturer in Navajo (Part-time).

JOSEPH BENEDICT ZAVADIL, B.A., M.A., Loyola University; Ph.D., Stanford University. Associate Professor of English, Chairman of the Department of English.

NICHOLAS HENRY ZELLER, B.S., St. Thomas College; M.D., University of Minnesota. Assistant Professor of Medicine.

JOHN THOMAS ZEPPER, B.S.Ed., Glassboro State College; M.Ed., Ohio University; Ed.D., University of Missouri. Professor of Educational Foundations, [7] Acting Chairman of the Department of Educational Foundations.

GORDON ALVIN ZICK, B.A., University of Wisconsin; M.Ed., Wisconsin State University; Ed.D., University of Illinois. Associate Professor of Guidance.

RAYMOND EUGENE ZIMMER, B.B.A., University of New Mexico. Visiting Lecturer in Business and Administrative Sciences (Part-time).

WILLIAM JOHN ZIMMER, B.S., St. Joseph's College (Rensselaer, Indiana); M.S., Ph.D., Purdue University. Associate Professor of Mathematics.

EDWARD AUGUST ZIMMERMANN, B.S., University of Dayton; M.D., St. Louis School of Medicine. Professor of Obstetrics and Gynecology.

LEE BERKEY ZINK, A.B., Indiana University; Ph.D., Oklahoma State University. Director of the Bureau of Business Research (ISRAD), Associate Professor of Economics.

[1] **MILES VERNON ZINTZ,** B.A., Iowa State Teachers College; M.A., Ph.D., State University of Iowa. Professor of Elementary Education.

[18] **EUGENE MILTON ZWOYER,** B.S. in CE., University of New Mexico; M.S. in C.E., Illinois Institute of Technology; Ph.D., University of Illinois. Professor of Civil Engineering.

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ROBERT DEUPREE HERRON, B.A., University of Richmond; M.A., Ph.D., University of Wisconsin. Resident Director, Andean Study and Research Center, Assistant Professor of Modern Languages.

BRANCH COLLEGE AT GALLUP

BARBARA HAUSER CAMERON, B.A., Wellesley College; M.A., University of Illinois. Lecturer in Philosophy (Part-time).

[1] On sabbatical leave for year.

[18] Resigned end of Semester I.

JUDSON CAMPBELL CREWS, B.A., M.A., Baylor University. Lecturer in Sociology (Part-time).

LAWRENCE LLOYD DICKERSON, B.A., M.A., University of New Mexico. Lecturer in Psychology (Part-time).

[7] **CAROLYN ROSE FARKAS,** B.A., Carnegie Mellon University; M.A., Johns Hopkins University; Ph.D., University of Maryland. Lecturer in English (Part-time).

HAROLD LEON GORDON, B.A., University of Maryland; M.A., University of New Mexico. Lecturer in Anthropology (Part-time).

[7] **ALVIN CLIFFORD HERONEMUS,** B.B.A., West Texas State University. Lecturer in Business Education (Part-time).

ED JONES, JR., A.B., Southeastern State College; A.S., Murray State College; M.Tchg., East Central State College. Lecturer in Mathematics (Part-time).

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GENERAL INFORMATION

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 of 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.

ACADEMIC PROGRAMS

The University is composed academically of eight undergraduate schools and colleges, the Graduate School, the School of Law, and the School of Medicine. The major undergraduate divisions include:

University College, an academic unit in which all freshman and many sophomore students are enrolled; the College also administers the BUS Program and several Associate degree programs.

College of Arts and Sciences
College of Education
College of Engineering
College of Fine Arts
College of Nursing
College of Pharmacy
School of Business and Administrative Sciences

Information about these divisions and their programs is contained in the individual college sections of this bulletin.

Summer and evening credit offerings are a part of the University's academic program on campus. Residence credit programs are available at the University's branch college at Gallup, at the Los Alamos Residence Center and at the Andean Study and Research Center in Quito, Ecuador. In addition, extension and independent study courses are offered by the University's Division of Continuing Education.

ACCREDITATION

The University has been a member of the North Central Association of Colleges and Secondary Schools since 1922; the most recent reaccreditation was in 1969. The Extension Division—now the Division of Continuing Education—was approved by the National University Extension Association in 1930. Approval of the Association of American Universities was given to the University in 1933, and the American Association of University Women recognized the University in the same year. The curricula in Civil, Electrical, and Mechanical Engineering have been fully accredited by the Engineers' Council for Professional Development since 1937, the most recent reaccreditation having been in 1966. In 1948 the College of Pharmacy was accredited by the American Council on Pharmaceutical Education and in 1952 it was accepted into membership by the American Association of Colleges of Pharmacy; its most recent reaccreditation was in 1969. The School of Law was approved by the American Bar Association in February, 1948, and was admitted to membership in the Association of American Law Schools in December, 1948. In the same year, the College of Education was accredited by the American Association of Colleges for Teacher Education. In 1954 the Association transferred its list of accredited institutions to the National Council for Accreditation of Teacher Education. In 1961 the National Council conducted a full-scale examination of the teacher education programs and, as a result, granted accreditation for all programs at this institution for the preparation of teachers, school administrators, and guidance counselors through the doctor's degree; the most recent reaccreditation was in 1969. The University was admitted to membership in the National Association of Schools of Music in 1950. The program of the Department of Journalism has been accredited by the American Council on Education for Journalism since 1955, and was most recently reac-

credited in 1966. The basic program of the College of Nursing, including public health nursing, was first accredited in 1959 by the National League for Nursing. The School of Medicine was recognized as a full member of the Association of American Medical Colleges in 1968. Accreditation by the Liaison Committee of the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges also was accorded in 1968. The Department of Architecture, initially accredited in 1967 by the National Architectural Accrediting Board, was reaccredited in 1969.

The University is approved for veterans' training under the several Public Laws governing educational benefits.

CAMPUS AND BUILDINGS

The campus of the University of New Mexico is in the eastern section of the city of Albuquerque and comprises over 500 acres, landscaped with grass, giant cottonwoods, elms, and mountain evergreens. Most of the 120 buildings exemplify the University's distinctive architectural style, contemporary in treatment but with strong influence from the Spanish and Pueblo Indian cultures. The architecture is characterized by rectangular terraced masses, protruding vigas, patios, balconies, portals, and earth-color walls slightly inclined to recall ancient adobe houses. Within easy walking distance of the instructional and administrative center of the campus are the dormitories, a 9-hole golf course (there is also an 18-hole golf course on the south campus), a swimming pool, tennis courts, campus theatre, faculty residences, and sorority and fraternity houses. (See the campus maps in the front of the Catalog for a listing of individual buildings.)

GOVERNMENT AND SUPPORT

The government of the University is vested in the Regents and the Faculty. Five Regents are appointed by the Governor of the State for a term of six years; the Governor and the Superintendent of Public Instruction are ex officio members of the Regents.

The University is supported chiefly by appropriations made by the State Legislature, by income from the rental of lands granted to it by the Federal Government, by the income from royalties on the oil taken from these lands, and by student fees.

HISTORY

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 500; buildings have increased from a single structure to 110.

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, and the Graduate School in 1919. In 1928 the College of Education was created; in 1935 the

General 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 and the "College of Business Administration" was renamed the "School of Business and Administrative Sciences" in 1968. 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. This Division, renamed the Division of Continuing Education in 1968, 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, and in 1956 the Los Alamos Graduate Center (renamed Los Alamos Residence Center in 1970) and the University College were created. 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, and in 1969 the Division of Public Administration was instituted. The University has 53 instructional departments and non-departmentalized schools and colleges, with the master's degree being offered in 51 fields. The doctorate may be earned in 26 programs within the following colleges: Arts and Sciences, Education, Engineering, Fine Arts, Law, and Medicine.

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 and archaeological background of the nation, and that its proximity to the Indian, Spanish, 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 tangible evidences of this interest are found in the uniform architectural style (a

modification of the Indian pueblo), which has been described as "the outstanding example of the effective use of regional architecture in the United States," the offering of a major in Latin American Studies, the annual Field Session in Anthropology, and the various examples of Indian, Mexican, and Spanish-American paintings, carving, and weaving to be found throughout the campus buildings.

SITUATION

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.

New Mexico is assuming a position of growing importance in the development of atomic and nuclear weapons and nuclear propulsion, and as a center for guided missile and rocket research and testing. The Los Alamos Scientific Laboratory, birthplace of the atomic bomb, is located 100 miles to the north; the Air Force Missile Development Center at Holloman Air Force Base and the Army's White Sands Proving Grounds are some 250 miles to the south; while in Albuquerque itself are the Air Force Special Weapons Center at Kirtland Air Force Base, the Field Command of the Armed Forces Special Weapons Project at Sandia and Manzano Bases, and one of the major research and development centers of the Atomic Energy Commission.

The city is on the A.T.&S.F. Railway and is served by transcontinental bus and air lines. Interstate Highways 40 and 25 intersect at Albuquerque.

Historic Santa Fe is approximately 60 miles to the north, and a number of Indian pueblos including picturesque Taos and Acoma are within easy driving distance.

DEVELOPMENT OFFICE

The function of the Development Office is to encourage private support, both financial and non-financial, of the University of New Mexico, thereby enabling the University to increase its contributions to the State and to the Nation in terms of teaching, research, and service. Additional financial support obtained from private sources enables the University to incorporate into its program those features which are essential to educational leadership and distinction, but which are beyond the financial responsibility of the State. Non-financial support—that is, understanding and goodwill—is essential to the successful execution of the programs and policies of the University.

The major objectives of the Development Program are: (1) to promote a better understanding of the University of New Mexico and to interpret its programs, its progress, and its needs to the public; (2) to develop and enlist the active interest and support of individuals and groups in its behalf; and (3) to provide these individuals and organizations with the opportunity to support voluntarily the University.

GREATER U.N.M. FUND

The Greater U. N. M. Fund was established in 1963 to help provide,

through contributions from alumni and friends, certain features that are characteristic of a quality institution but which are often beyond the ability of the State to provide. These would include such benefits as scholarships, specialized equipment, library materials, and funds for faculty research.

ALUMNI ASSOCIATION

The Association is maintained through cooperative efforts of the University and the alumni body. All graduates and former students of The University of New Mexico are members of the Association. Programs and policies of the organization are determined by a board of directors, whose members are chosen with respect to college, graduation year, and geographic location.

The Association coordinates and directs Homecoming activities, arranges class reunions, organizes alumni clubs throughout the State and Nation, promotes citizenship among undergraduates, assists with student recruitment, provides advice to the University administration upon request, assists in the University's legislative relations program, and in other ways encourages alumni interest in and support of the University.

The **Alumnus**, official organ of the Association, is published eleven times a year and is mailed to all members. Alumni Association file records include information on more than 37,000 persons who have attended the University since its opening. Master geographical and class files are maintained.

The Association's offices are located in the New Mexico Union, Suite 200.

INSTRUCTIONAL MEDIA SERVICES

This office provides assistance to the University faculty in utilization of the newer media and technology in their instructional programs. The following areas are encompassed:

FILM LIBRARY—acquires film (rental or purchase) for instructional purposes in regularly scheduled undergraduate and graduate classes.

AUDIO-VISUAL CENTER—provides, upon request, audio-visual equipment and operators to faculty for instructional purposes.

CLOSED CIRCUIT TELEVISION—provides video tape recording and play back equipment to all instructional areas in the University. Personnel will, upon request, assist faculty in the utilization of this equipment.

INSTRUCTIONAL DEVELOPMENT—assists in employing different methods and/or modes of teaching, utilizing the "newer" media and technology, toward improvement of instruction.

IN-SERVICE EDUCATION—includes regular sessions for faculty, teaching assistants, graduate assistants, and other persons who wish assistance in the operation and application of audio-visual equipment and/or other instructional media.

GRAPHICS SERVICE—develop and produce graphic material for instructional purposes, including: charts; diagrams; 35mm and 3¼ x 4 slides; thermal, diazo, photographic transparencies and other graphics.

AUDIO SERVICE—produces and/or duplicates audio materials: reel and cassette; monaural and stereo.

ELECTRONIC REPAIR SERVICE—provides upon request maintenance and repair of campus audio-visual and video equipment.

LECTURES

THE ANNUAL RESEARCH LECTURESHIP

The Annual Research Lectureship of the University, established in 1954, was authorized by the General Faculty in order to encourage, recognize, and honor research and creative work and to acquaint the University community and the public with the achievements of faculty members. The Graduate Committee, in joint sponsorship and with the approval of the University Administration, makes the yearly nominations of the lecturer.

CARL GRABO MEMORIAL LECTURES

These lectures in memory of Carl Grabo, Visiting Professor at the University from 1947 to 1954, are offered each year under the auspices of the Department of English and are open to the public. They are supported by income from a fund established by friends of Carl Grabo.

VISITING LECTURERS

Funds are available to two faculty committees, under the sponsorship of the Graduate School, for the purpose of inviting noted scholars and public figures for occasional public lectures on the campus. One committee is concerned with lectures in the general area of the humanities and social sciences, the other in engineering, mathematics, and science.

SPEAKERS COMMITTEE

The Speakers Committee, a joint student-faculty committee, annually brings to the campus a number of public lectures on topics of current interest. These lectures are financed by student government.

MUSEUMS, COLLECTIONS, AND EXHIBITIONS

MAXWELL MUSEUM OF ANTHROPOLOGY

The collections and exhibits of the Maxwell Museum of Anthropology are located in the south wing of the Anthropology Building. Exhibits feature the life of the Palaeo Indians, Early Pueblo life, the Pueblo Classic Period and two exhibits on late pueblo culture. In the latter is a full scale reproduction of a section of one of the famous painted kivas at the site of Pottery Mound. Other exhibits include Navajo, Northwest Coast, Eskimo, Plains Indians, Navajo silver, the Gallina culture, Mexican and Andean archaeology, Navajo weaving, human evolution, cultures of Oceania and Africa and of various prehistoric periods of Europe and the Old World. These exhibits are available to the public. The museum is open 9 a.m. to 4 p.m. Monday through Friday and 10 a.m. to 4 p.m. on Saturdays. School groups and others may make special arrangements for guided tours. Director: John M. Campbell; Curator: J. J. Brody.

UNIVERSITY ART MUSEUM

The University Art Museum, located in the Fine Arts Center, was opened in October 1963. The Museum's physical facilities, among the finest in the Southwest, are of a size to permit concurrent presentation of a continuing series of major exhibitions, together with selections from the Museum's Permanent Collection. Notable among the exhibitions the Museum has organized in the past six years are The Painter and the Photograph, Georgia O'Keeffe Retrospective Exhibition, Impressionism in America, Cubism in the USA, Young Photographers, Marin in New Mexico and Spanish Colonial Art of Mexico (organized in cooperation with Programa Nacional Fronterizo). The Museum also presents annual exhibitions of works by students and faculty of the Department of Art, as well as exhibitions organized by other institutions. The museum hours are 10 a.m. to 5 p.m. Tuesday through Friday, and Sunday 12 to 5 p.m. Acting Director: Louise M. Lewis.

HARWOOD FOUNDATION

The University of New Mexico maintains the Harwood Foundation in Taos, New Mexico. The Foundation has an excellent and extensive collection of paintings by artists who have lived and worked in New Mexico. Selections from the collections are frequently exhibited. Director: Mrs. Toni Tarleton.

JONSON GALLERY

This gallery on the campus at 1909 Las Lomas Road, N.E., is open to the public daily from 12 noon to 6 p.m. The exhibition program features monthly one-man shows or group shows by New Mexico artists, with emphasis upon contemporary painting. During the summer, the gallery presents an annual exhibition of paintings by Raymond Jonson, Director of the gallery.

MUSEUM OF SOUTHWESTERN BIOLOGY

(Biology Building) The Department of Biology maintains the Museum of Southwestern Biology, the most important single source of New Mexican vertebrates and plants. The J. Stokely Ligon bird collection and the George B. Wilmott collection of amphibians are also deposited here. This is a research museum, maintained for the use of all serious students of southwestern field biology, although priority in the use of materials is reserved for University students and staff. Curators: William G. Degenhardt, Reptiles and Amphibians; James S. Findley, Mammals; William J. Koster, Fishes; J. David Ligon, Birds; William C. Martin, Plants.

GEOLOGY MUSEUM

(Geology Building) The Geology Museum has a double purpose: it is designed to serve the general public and to supplement the instructional program. Exhibits include a systematic series of minerals, a stratigraphic series of fossil animals and plants, a paleontologic series of fossil and modern invertebrates, and systematic series of igneous, sedimentary, and metamorphic rocks.

Other notable features are an exhibit illustrating how fossils are preserved; an exhibit of New Mexico metallic and nonmetallic ores; rotating exhibits of various geological materials; a series of map displays; a geologic cross-section through Mount Taylor and the Sandia Mountains, together with numerous rock

samples; and an unusually fine fluorescence-phosphorescence exhibit of minerals under both long-wave and short-wave ultraviolet light. The Albuquerque Gem and Mineral Club maintains a case with rotating exhibits of specimens, including gems and precious stones. 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, shows major earthquakes as they occur throughout the world. An exhibit of meteorites will be installed in the near future. The museum is generally open 8 a.m. to 5 p.m. Monday through Friday.

INSTITUTE OF METEORITICS, DEPARTMENT OF GEOLOGY

The Institute of Meteoritics is a division within the Department of Geology, dedicated to the collection and investigation of meteoritic materials and related phenomena. The Institute's remarkable collection includes the world's largest known stone meteorite, recovered in Norton County, Nebraska, in 1948.

The objectives of the Institute are as follows:

1. To recognize and acquire meteorites and related materials.
2. To preserve and exhibit meteoritic materials, and to make these materials available to scientists working in fields closely allied to meteoritics.
3. To study meteorites and related materials by mineralogical, petrological, chemical, and physical methods; to observe and analyze meteors and related atmospheric phenomena; to study the nature of the space environment with respect to meteoroids and meteorites; and to investigate other meteoritic phenomena significant for the earth sciences and astronomy.
4. To provide materials, facilities, and supervision for research by candidates for advanced degrees in geology or in other fields, and to offer instructional programs approved through usual academic procedures.

Director: Klaus Keil.

POPEJOY HALL

Popejoy Hall, located in the southeast wing of the Fine Arts Center, is one of the finest cultural facilities in New Mexico. This 2,000-seat concert hall is designed and acoustically equipped to accommodate virtually every type of live performance from Broadway touring theater to symphony concerts, ballet, films, lectures, and convocations. The Hall is intended primarily as an educational and cultural resource for the University, with first priority assigned to programs sponsored by its departments and agencies.

Since its opening in October of 1966, Popejoy Hall has hosted over 700 cultural programs. It is the home of the Albuquerque Symphony Orchestra, the Community Concert Association, and the Civic Light Opera, as well as the Associated Students Cultural and Speakers Committee Programs, and the major programs presented by the Department of Music. Director: William J. Martin.

UNIVERSITY LIBRARIES

The total holdings of all University libraries are in excess of 720,000 volumes.

THE ZIMMERMAN LIBRARY

BUILDING. The general University Library is housed in a building which is frequently cited as the best example of the modified pueblo style of Southwestern architecture unique to this campus. The building, enlarged by an addition completed in the summer of 1966, provides for a future collection of 650,000 volumes and seats for 1,725 readers. It contains 69 faculty studies and 207 carrels for graduate students. On separate floors are complete library services for the Social Sciences, Humanities, Science and Engineering, and the Information Center. The Special Collections Department is housed in second-floor rooms including a large vault and the Thomas Bell Room for rare materials.

RESOURCES. The general library collection contains 565,000 cataloged and processed volumes, several thousand other cataloged serials and pamphlets, 391,432 microforms, 71,000 maps, and 1,124,024 pieces of archival material. These resources provide adequate study and research facilities for undergraduate work and for the special fields in which graduate work is offered. According to the Cartter Report of 1966, **An Assessment of Quality in Graduate Education,** the University of New Mexico library ranks as one of the ten best in the western states.

SPECIAL COLLECTIONS. The beautiful Clinton P. Anderson Room contains a special collection of Western Americana. The Coronado Room contains an extensive collection of books and other materials concerning the history and culture of New Mexico. It contains State publications and books about New Mexico; several hundred bound volumes of photostats of the archives of Spain, Mexico, and New Mexico; letters, manuscripts, documents, and state archival materials assembled by the U.S. Historical Records Survey.

The business history collection contains records of the first National Bank of Santa Fe, 1871-1926; the Ilfeld Company, 1865-1907; Gross, Kelly & Co., 1880-1940; Bond & Son, Inc., 1900-1940; and several others.

The Van de Velde Collection of Mexican Materials, consisting of 8,686 bound volumes, 93 maps, and 50 linear feet of pamphlets was purchased in 1939 by a special appropriation of the State Legislature. It contains much rare and valuable material dealing with history, archaeology, ethnology, geology, folklore, literature, and art of Mexico.

The Catron Collection, of 9,574 volumes, is an extensive and valuable library begun by Julia W. and Thomas B. Catron and given to the University Library by their sons, C.C. Catron, T.B. Catron, F.A. Catron, and J.W. Catron. Outstanding items are several hundred Spanish and Mexican publications of the 16th to 19th centuries, and 375 filing cases and boxes of letters and documents dealing with territorial New Mexico events, particularly the land grant system of the State.

The Otero Collection, given by former Governor and Mrs. Miguel A. Otero in 1939, contains 465 volumes on the Southwest and general fields, as well as a valuable manuscript and museum collection.

The Field Collection of old Spanish and Mexican Art, which includes 96 pieces

ZIMMERMAN LIBRARY

of silver and 69 other art objects, was given by the estate of Neill and Mary Lester Field in 1939.

USE OF THE LIBRARY. The Library is open to all students in all departments of the University. In addition to serving the students and faculty, and subject to their needs, the Library is available for use by citizens of the State, by permission.

Books withdrawn for home use may be kept until the end of the semester unless their return is requested. Reserved books may be used only according to rules posted at the Reserve desk. Fines are charged for the late return of books.

HOURS. The Library is open from 8 a.m. to 11 p.m., Mondays through Fridays; from 8 a.m. to 5 p.m., Saturdays; and Sundays from 1 to 11 p.m.

FINE ARTS LIBRARY

The Fine Arts Library is located in the Fine Arts Center. This library contains the library materials for art, music, drama, and architecture. Reference service in these areas is handled by the Fine Arts Library staff. A special room houses rare books and other valuable resources. Two practice rooms, with pianos, are located in the library complex. Library patrons use these facilities to perform works from scores.

The Fine Arts Library maintains its own complete card catalog. Separate divisions are provided for approximately 40,567 books and scores, and 10,601 recordings and tapes. The audio materials, which include the Archive of Southwestern Music, are available for use through specially designed listening facilities.

A reference collection of 96,966 slides and 16,500 photographs and reproductions is maintained by the Fine Arts Library. The collections are particularly strong in American Indian art, Pre-Columbian art, Spanish Colonial art and architecture, and 20th-century art and architecture.

THE WILLIAM J. PARISH MEMORIAL LIBRARY

The William J. Parish Memorial Library is located on the ground floor of the Business and Administrative Sciences Building. It contains a working collection of materials pertaining to the study of Business, such as the technical services on tax, labor relations, etc., periodicals in the various areas of administration and underlying disciplines, reserved books for the School's courses, and a collection of about 8,000 volumes of recent and standard works in Business and Administrative Sciences.

LAW LIBRARY

The School of Law Library, housed separately with the law school, received an auspicious start through donation of the Francis C. Wilson, Francis E. Wood, and other private law library collections. It contains over 100,000 volumes and is being augmented by approximately 600 volumes each month. The library includes comprehensive collections of British, Federal, and State court reports, including special and annotated series, session laws, current State and Federal statutes, legal treatises, periodicals, encyclopedias and digests, administrative reports, and other classes of legal materials. Special collections are being

developed in American Indian law (both primitive and current), and in water law.

LIBRARY OF THE MEDICAL SCIENCES

The Library of the Medical Sciences, housed in Medical School Building 2, 900 Stanford Dr., N.E., also houses the Albuquerque Bernalillo County Medical Association's Library.

The library's collection has grown to more than 74,000 items including book, serials, pamphlets, microfilm, microfiche, audio tapes and discs, slides, films and film strips. It receives more than 1,500 current biomedical serials.

The library has pioneered in the use of computer and data processing techniques in information management.

The library houses a Health Science Information and Communication Center jointly funded by the New Mexico Regional Medical Program and a grant from the U.S. National Library of Medicine. Through this program the following services are offered to all health personnel throughout New Mexico: (1) dial access tape library; (2) reference and information searches; (3) photocopying of items requested by mail or telephone; (4) MEDLARS searches; (5) consultation with Regional Medical Program and School of Medicine faculty; and (6) specialized information for planning, evaluating, and funding of health projects in New Mexico.

The library staff brings together experts in fields of information science and librarianship, audio-visual aids, education and communication in an interdisciplinary approach to problems in medical communication and education.

ORGANIZED RESEARCH ACTIVITIES

THE OFFICE OF THE VICE PRESIDENT FOR RESEARCH

George P. Springer, Vice President for Research and Dean of the Graduate School

Several research support activities are administratively under the supervision and direction of the Vice President for Research. He collaborates with the deans of colleges, the chairmen of departments, the directors of interdisciplinary organizations, and the Faculty Research Policy Committee in promoting University research activities and in informing faculty and students of the University's research efforts and opportunities. He is directly responsible for the Institute for Social Research and Development, the Office of Radiological Safety, the Office of Research and Fellowship Services, and together with the Vice President for Student Affairs, for the Office of International Programs and Services.

THE INSTITUTE FOR SOCIAL RESEARCH AND DEVELOPMENT

[37]George P. Springer, Acting Director; Arthur A. Blumenfeld, Assistant Professor of Business and Administrative Sciences, Associate Director

A variety of factors including population growth, new technology, changing expectations in a mobile society, and other forces for change have created problems of development. A cooperative effort is necessary to find solutions.

ISRAD was established in 1968 to analyze current problems and to give

[37] 1/1/72-3/10/72.

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. ISRAD provides a mechanism through which all of the University's talents may be brought to bear as needed on major societal problems.

The programs of the Institute are intended to stimulate, encourage, and coordinate research and action within the University. ISRAD seeks and supports active participation in its activities by faculty members and students. The Institute also serves as a means whereby the University becomes aware of social and economic problems, and as a center for organizing and acting toward solutions.

The Institute functions through a series of operating agencies. Three of them—the Home Improvement Project, the New Careers, and Work Incentives—are grouped together under the Institute's Center for Human Resources Development. Other agencies of the Institute are: the Bureau of Business Research, the Bureau of Revenue Training Program, the Center for Environmental Research and Development, the Center for Leisure and Recreation, the Child Development Program, the Division of Government Research, the Technology Application Center, the College Enrichment Program, Special Services, and the Criminal Justice Program.

THE BUREAU OF BUSINESS RESEARCH

Lee B. Zink, Director

The Bureau of Business Research was established in July 1945. Its purpose is to promote the economic welfare of the State through investigation and study of economic and business problems and through the dissemination of information. More specifically, its objectives are to promote the development and intelligent use of the State's resources and full employment for its people; to assist businesses in dealing with their problems of marketing, internal operations, and planning; to encourage the pursuit of business and economic research by students and faculty; and to provide a medium through which the skills and talents of the University as a whole may be made of assistance to the community.

The basic activities of the Bureau consist of gathering, collecting, analyzing, and interpreting data concerning the economic life of the State—its population, natural resources, employment opportunities, income, business activities, and markets. Studies are initiated by the Bureau or are undertaken for business concerns, governmental agencies, or other interested organizations. So that the results of its studies may be used, information is disseminated through Bureau publications, the press, radio, and television. Bureau publications include these:

New Mexico Business, a monthly journal which regularly carries several significant indexes of business activity in New Mexico, a short article summarizing recent business activity, and a feature article on some business or economic problem or area;

Retail Food Price Bulletin, a quarterly report presenting the results of the

Bureau's survey of food prices at representative food stores throughout New Mexico;

"Business Information Series," which consists of releases incorporating results of small studies and collections of information of current interest;

"New Mexico Studies in Business and Economics," a series in which research monographs on various subjects are issued at irregular intervals;

"County Economic-Background Series," individual reports on the development and nature of the economy of New Mexico counties.

Other activities include the Southwest Management Development Program, consisting of several types of intensified adult-education programs offered at intervals throughout the year in cooperation with the UNM School of Business and Administrative Sciences.

The Bureau confers with groups and individuals desiring to avail themselves of Bureau services. It sponsors conferences at which businessmen, civic leaders, and scholars meet to exchange information and pool their resources toward the solution of common problems.

COMMUNITY ECONOMIC EDUCATION AND DEVELOPMENT PROGRAM. The aim of this program of the Bureau is to assist leaders in various New Mexico communities in learning more about the processes of economic development. Through intensive personal exchange with Bureau representatives, these individuals will learn more about defining the economic needs of their communities and how the various programs of the Bureau, the Institute, and the University can assist in those needs.

DATA BANK. The Data Bank is the State's primary source of a wide variety of published and unpublished business and economic information on the State and Nation. Upon request from individual citizens, official agencies and departments, institutions, private business firms, etc., the Data Bank identifies, assembles, and forwards materials meeting precise needs. Free staff time on each request is limited; however, users may come to the Data Bank and gather their own materials. The Data Bank also functions as the primary ISRAD information source.

Resources of the Data Bank include information collected during the 1970 Census of Population and Housing. The information is on computer tapes. It is available for the use of persons in the private and public sectors interested in demographic information.

BUREAU OF REVENUE TRAINING PROGRAM

Edwin H. Caplan, Professor of Business and Administrative Sciences, Director

ISRAD and the UNM School of Business and Administrative Sciences jointly conduct three training programs for employees of the New Mexico State Bureau of Revenue. Offered to the Bureau of Revenue's auditing staff, these programs are seen as a means of improving the quality of state tax administration.

Training is given in accounting, organization theory and administration, data processing, and business law. The objective is to bring participants to levels of understanding and skill required for the position of tax auditor.

The program sponsors an annual series of Workshops on New Mexico

State Taxes to familiarize taxpayers and their representatives with changes in tax laws and in matters of tax administration.

CENTER FOR ENVIRONMENTAL RESEARCH AND DEVELOPMENT

Richard A. Anderson, Associate Professor, Architecture, Director

The Center, established in 1969, applies resources of the university community to problems of improving our physical environment. Technical assistance and consulting services are available to community and governmental agencies working with urban and rural problems. Seminars, conferences, and lectures are sponsored by the Center to offer broader understanding of environmental needs.

Within the University the Center aims at developing an interdisciplinary research program that will encourage cooperative work among architects, community health workers, ecologists, economists, political scientists, sociologists, planners, and other specialists.

The Center concentrates on problems of New Mexico and the Southwest. These include the impact of federal and state land ownership on regional planning, the revitalization of small towns and villages, opportunities and limitations imposed by the urban structure of our fast-growing cities, and the need for ecologically-oriented planning for arid lands.

CENTER FOR LEISURE AND RECREATION

E. A. Scholer, Professor of Health, Physical Education and Recreation, Director

New Mexico has a huge potential and is experiencing growing demand for recreation of many kinds. The Center for Leisure and Recreation was established to work in these areas. The center's purposes are five: aid to municipalities in programming and recruitment, research on various factors influencing leisure and recreation, help to private interests in development of commercial recreational facilities, aid to state agencies in recreational development, and assistance to minority groups in establishing commercial programs and facilities.

In the last area of emphasis, the center has worked with the Southern Ute, Santa Clara, Jemez, Jicarilla, and Cañoncito Navajo Indians, and with the Navajo Parks and Recreation Commission. The center has also worked with the cities of Las Cruces and Albuquerque, and with the Carrie Tingley Hospital for Crippled Children.

The center focuses on recreation and leisure activities the energies of members of the UNM department of health, physical education and recreation, as well as graduate students and faculty from other areas of the University.

CHILD DEVELOPMENT PROGRAM

James C. Jaramillo, Director

Ideas that most middle class Americans take for granted are often completely foreign to the childhood experience of children from poverty backgrounds or from minority group homes. Such ideas include identity, self-reliance, cooperative effort, teamwork and basic uses of language and numeric skills. The Child Development Program works those ideas into innovative curriculum and teaching materials, for use in centers operated in Albuquerque's barrios by United Child Care Inc., a community-based nonprofit corporation.

In addition, Child Development studies and evaluates the progress of enrolled children and participates in training teachers and other United Child Care Inc. personnel. In the latter connection, the University offers a program of studies leading to the associate of arts degree in human services and emphasizing early childhood education.

The Child Development Program is supported by a grant fom the Carnegie Corp. and by funds from the U.S. Department of Health, Education and Welfare.

COLLEGE ENRICHMENT PROGRAM

Dan Chavez, Director

The College Enrichment Program is designed to recruit and assist graduating high school seniors from low-income backgrounds who have the potential for college success but who need motivation, financial aid, and academic assistance.

The objectives of the program are to assist participants in several ways; to orient the students to college life, to provide college preparatory instruction, to provide tutoring services, to develop efficient study skills, to develop appreciation of the arts by providing cultural opportunities, to encourage participants to enroll in graduate programs leading to academic or professional degrees upon graduation, and to assist participants in securing financial aid from such sources as the National Student Loan Program.

The program consists of two main components: a summer program and a program of follow-through services. The special summer training session includes language arts and communication skills, logic and verbal expression, and social studies with emphasis on circumstances in New Mexico. Upon entering college, the participants are provided with academic advising, counseling, and tutoring services.

DIVISION OF GOVERNMENT RESEARCH

John M. Hunger, Assistant Professor of Public Administration and Assistant Professor of Political Science, Director

The Division of Government Research was established in 1945 for the purpose of publishing studies in the government and politics of the state, region, and the nation, and making them available to public officials, civic, educational, and community organizations and interested individuals.

Research findings have been made available to the public through 81 published monographs on a wide range of subjects.

The division maintains a central file of New Mexico election statistics beginning with statehood. It operates a reference room housing publications, reports, surveys, and subject matter files on New Mexico's state and local governments, and on the Albuquerque metropolitan area. The division operates information exchanges with many agencies nationally and abroad.

The division conducts training programs for state and local government officials. Topics covered in seminars and workshops include modern techniques of management, intergovernmental relations, organizational behavior, and others. Programs are held at various locations throughout the state.

CENTER FOR HUMAN RESOURCES DEVELOPMENT

L. E. Roberts, Director

The Center is responsible for developing and managing a broad array of human resource development programs within the University. At present, the Center operates three programs:

NEW CAREERS

New Careers is working with about 100 people recruited from low-income areas. They are enrolled in a two-year program including training at the University and on-the-job experience gained at four public agencies. Participants in the latter phase are the Albuquerque Public Schools, the State Department of Health and Social Services, Bernalillo County Mental Health Center, and the Employment Security Commission.

Persons completing the New Careers Program may receive the University's Associate of Arts Degree in Human Services. Two-thirds of all requirements are in special classwork and working experience; one-third requires completion of 24 regular academic class hours at UNM.

The Generic Training Program has been selected by the Manpower Administration of the U.S. Department of Labor as a training site for management trainees.

WORK INCENTIVES

Work Incentives assists mothers on welfare to become qualified as regular jobholders. Women referred by the Employment Security Commission are tested and trained to meet specific job requirements. Programs are highly personalized.

HOME IMPROVEMENT PROJECT

Begun four years ago as a pilot demonstration project of the U.S. Office of Economic Opportunity, the Home Improvement Project is a multiphase approach to the problems of men with few, if any, qualifications for employment. It combines academic instruction for dropouts, with individual training and counseling, on-the-job training, and intensive follow-up.

The program includes specific training in building trades. Experience is gained in making repairs and renovations to substandard housing in Albuquerque and neighboring communities. Trainees supply labor, while homeowners supply materials.

On completion of training, participants are placed in jobs with Albuquerque businesses. Follow-up services are provided trainee and employer. During the fiscal year ended June 30, 1970, a total of 70 trainees were placed in jobs, after completing 60 home improvement projects in Albuquerque's poorest neighborhoods.

THE CRIMINAL JUSTICE PROGRAM

William F. Partridge, Director

The Criminal Justice Program was established early in 1971 to investigate the causes and consequences of crime in the community, to study efforts to manage problems of criminality and to rehabilitate offenders, to make recommendations for improvement and coordination of agency efforts in enforcement, administra-

tion of justice and corrections, and to assist agencies in their dealings with the federal government. The program contains a heavy emphasis on development of management systems and potentials, and on the creation of information resources necessary to sound decision-making in the field of criminal justice.

THE SPECIAL SERVICES PROGRAM

Facundo Valdez, Director

The Special Services Program, ISRAD's newest, provides tutoring and counseling services to undergraduate students from disadvantaged backgrounds. The program's central purpose is to increase the rate at which such students are retained at the University by helping them deal with the institutional and personal pressures that lead to dropping out.

In tutoring, the program's assistance is subject-oriented. The counseling component promotes the individual's survival skills—his ability to cope with the institutional environment. The program also works with its enrollees to secure financial aid and, where necessary, to help overcome personal problems.

Established in October, 1971, Special Services is supported by a grant from the U.S. Department of Health, Education and Welfare.

TECHNOLOGY APPLICATION CENTER

William A. Shinnick, Assistant Professor of Business and Administrative Sciences, Director

This Center operates programs for transferring to private industry newly developed product ideas, processes, innovations, technical information, and other new technology. The Center combines sophisticated techniques of handling and retrieving information with a multidisciplinary staff of experienced engineers and business specialists, complemented by the faculty and the resources of the University and by other participating Centers throughout the nation.

The four major services are: (1) problem-solving searches, starting with identification and definition of the client's problem and then performing a computerized search of many hundreds of thousands of technical documents and finally selecting those data relevant to the problem; (2) current awareness searches which screen new technical documents which become available each two weeks and pass on to the client all new information applicable to his specific area of technical interest; (3) Industrial Application Reports, which announce on a monthly basis new ideas and innovations thought to have the potential for significant impact on participating firms; (4) general services, including access to special bibliographies and marketing technology and a wide range of aids in management, engineering, and the sciences, with these aids being made available through Institute and other campus programs.

Three programs provide these services: (1) a statewide industrial program for small business which includes continuing contact of firms by field engineers and educational seminars; (2) a regional industrial program for the larger firm supported by the Office of Technology Utilization of the National Aeronautics and Space Administration; (3) a national natural resources program specializing in the application of new technology to the natural resources firm also supported by NASA's Office of Technology Utilization.

THE OFFICE OF RESEARCH AND FELLOWSHIP SERVICES

Edmund B. Kasner, Director

The broad purposes of the Office of Research and Fellowship Services are:

(1) to foster a more effective and more extensive program in research and other scholarly pursuits within the University;

(2) to make a continuing survey of the research and other scholarly and creative interests, activities, and needs, as well as of the human and physical resources, within the University; and to disseminate this information to departments, the University administration, and possible sponsors of research;

(3) to coordinate, insofar as practicable, the various research and fellowship administrative service activities on campus;

(4) to seek funds in support of research and other scholarly and creative activities and interests in the University, including faculty and student fellowships; and to disseminate to appropriate individuals, faculty, and administration information concerning application procedures for such financial aid;

(5) to assist faculty members in determining that proposals are prepared in accordance with the policies of the University and of the sponsoring agency;

(6) to act as the University's reviewing agency for all research proposals submitted to outside agencies, except for those emanating from the School of Medicine.

THE OFFICE OF RADIOLOGICAL SAFETY

W. L. Tabor, Radiological Safety Officer

On behalf of the Committee on Radiological Control, the Radiological Safety Officer promulgates the policies, procedures, standards, and rulings concerning radiation and radiological safety aspects of radiation licenses at the University so as to assure the safety of students, faculty, staff and the general public.

OTHER RESEARCH PROGRAMS

RESEARCH ALLOCATIONS COMMITTEE

This Committee supervises and allocates the University Research Fund. It works with the Vice President for Research and meets with him formally at least once each semester to discuss the availability and allocation of funds. The Committee receives requests from faculty members (except those in the Faculty of the School of Medicine) for grants-in-aid, determines faculty eligibility for grants from the Fund and the amount of such grants, and appraises the merits of proposed research projects as well as the productivity of the applicants.

ERIC H. WANG CIVIL ENGINEERING RESEARCH FACILITY

Arthur V. Houghton III, Professor of Mechanical Engineering, Director

The University of New Mexico has operated this facility since its organiza-

tion in 1961 as the Air Force Shock Tube Facility. Located on Sandia Base and owned by the Air Force Weapons Laboratory, the laboratories conduct research relating to the civil engineering of Air Force bases anywhere in the world.

Theoretical as well as experimental research programs provide thesis and dissertation topics for graduate students as well as part-time employment for undergraduate students and research topics for faculty and full-time staff.

BUREAU OF EDUCATIONAL PLANNING AND DEVELOPMENT

Richard F. Tonigan, Professor of Educational Administration, Director

The Bureau is a field service organization which serves as a vehicle for connecting the interests and talents of the faculty, graduate students and the University with the educational planning efforts of a great variety of educational agencies.

The Bureau contracts with public and private organizations to analyze educational problems and to develop feasible solutions. Its staff works with school systems; colleges and universities; local, state and national educational agencies; industry, private planning and consulting firms; and overseas missions and governments.

The Bureau of Educational Planning and Development helps to plan and improve education both by providing selected field service and research experiences beneficial to the development of graduate students and to stimulate the interests of the faculty and selected graduate students with the planning and implementation efforts of a great variety of educational agencies.

The Bureau guides the activities of two major organizations: The New Mexico Research and Study Council, comprised of 30 New Mexico School Districts which jointly provide funds for the development of projects for the districts; and the School Plant Planning Service, which gives assistance to school districts in developing curricula and facilities.

The Bureau encourages the development of both proven and innovative concepts in organizational planning, curriculum and facility planning, administration, educational financing and teacher training.

The activities of the Bureau of Educational Planning and Development may be supported by gifts and grants.

THE BUREAU OF ENGINEERING RESEARCH

Harold D. Southward, Professor of Electrical Engineering, Director

Established in 1937 as an Engineering Experiment Station, the Bureau of Engineering Research is an integral part of the College of Engineering. Research activities in the College of Engineering are directed toward (1) maintaining an engineering faculty who are leaders in the discovery and development of new engineering knowledge, (2) supporting the engineering graduate program by affording graduate students high-level research opportunities, and (3) service to the citizens and industry of the State of New Mexico.

It is the purpose of the engineering research program not only to train future research workers, but also to carry out a program of research that assures both

sound investigations of a fundamental nature in the engineering sciences and work devoted to the solution of State problems and to greater utilization of the State's natural resources. Through publications, cooperative activity with New Mexico industry, and the conduct of sponsored contract research projects, it is the purpose of the Bureau of Engineering Research to play a prominent role in the industrial and technical development of New Mexico.

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 the student to develop his 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 non-credit Corps Training. Students qualified for flying training receive flight instruction in civilian aircraft during their senior year. A total of 36½ hours of flight instruction is offered and normally leads to a FAA private pilot's certificate.

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. Non-scholarship participants receive $430 for the six-week summer training period and $265 for the four week summer training period (in addition to six 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 subsistance throughout the academic period that the scholarship is in effect. Scholarships are available for four, three and two year periods.

NAVAL ROTC

The NROTC Unit at UNM offers the four-year NROTC Scholarship Program, the four-year NROTC College Program and the two-year NROTC 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 1 for entry into the program the following August. Applicants first compete nationally on the basis of ACT or SAT scores; subsequent selection heavily weighs the applicant's academic performance in high school and college.

Applicants 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 $100.00 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 $100.00 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 Boulevard NE, Albuquerque 87106, telephone (505) 277-3744.

ADMISSION AND REGISTRATION

APPLICATION AND CREDENTIALS

ALL COMMUNICATIONS regarding entrance to the undergraduate colleges of the University should be addressed to the Dean of Admissions. The University requires that each applicant file an application for admission (form to be obtained from the Office of Admissions and Records) and pay an application fee (see information below). In addition, he must have his credentials sent directly to the Dean of Admissions from the high school or college(s) previously attended; transcripts submitted by students are not acceptable for entrance purposes. **Deadlines for the receipt of applications and credentials (including test scores when applicable) are July 1 for the fall semester and December 1 for the spring semester.** It may become necessary to close admissions at an earlier date if numbers of students admitted reach the maximum that can be accommodated. **The deadline for Dental Hygiene is March 1. The deadline for the professional program in Medical Technology is April 1.**

Students are accepted for admission to the undergraduate colleges of the University for the spring semester (see Calendar) as well as for the fall and summer sessions, except that students may enroll for the first semester of Dental Hygiene and the professional program in Medical Technology only in the fall. Applicants for Dental Hygiene or Dental Assisting programs are referred for special admission procedures and requirements to the College of Pharmacy section of this catalog.

Applicants for the Graduate School, the School of Law, or the School of Medicine should make application directly to those schools and are referred for specific information about admission to the respective sections of this catalog and to the bulletins of those schools.

AMERICAN COLLEGE TESTS (ACT)

The ACT Assessment (formerly ACT Test battery) is required for advisement and placement purposes of all students applying for admission as beginning freshmen and of transfer students applying with fewer than 26 semester hours of college credit acceptable by this University. Other national tests may not be substituted for the ACT. Although the American College Test is given several times each year, it is recommended that it be taken on a summer or early fall testing date following completion of the student's junior year in high school. Students are required to register with ACT in advance of the testing sessions. High school seniors should consult their counselors for registration deadlines and testing dates and places. Students who have completed high school may obtain a test registration form from a nearby high school or college testing office or by writing for information to: ACT Registration Unit, P.O. Box 414, Iowa City, Iowa 52240. ACT standard scores or percentiles appearing on transcripts do not fulfill University requirements. Only the complete packet of test information containing predictive data as well as test scores mailed directly to the University by ACT will meet this need.

APPLICATION FEE

An Application Fee of $15 is payable when the application for admission is submitted. This fee is not refundable. The application and credentials of students who apply for admission but do not enroll are kept on file for one calendar year after the beginning of the session for which application was made. The Application Fee paid with the original application will be extended to cover a reapplication for a session starting within that time-limit.

FRESHMEN

HOW TO APPLY

Each freshman applicant is required to:

1. Present an application for admission (See p. 103).
2. Enclose with the application form the application fee.
3. Have ACT scores (see p. 103) sent to the Dean of Admissions.
4. Request that his high school send an official transcript of his record to the Dean of Admissions.

When the application, transcript, and ACT results have been received, the Office of Admissions will send to the applicant notice of eligibility or ineligibility for admission. When the student applies early in his senior year, a notice of eligibility is issued as soon as processng 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 admissions are accompanied by registration information, a room and board contract if the student requests dormitory accommodations, and medical forms, including information about a supplementary health and accident insurance program available to students.

WHEN TO APPLY

A high school student, especially one who also is applying for financial aid, is urged to apply for admission and financial aid early in his senior year. The applicant should have his high school mail to the Dean of Admissions a transcript complete for his first six semesters. A student who applies during his final senior semester should provide a transcript complete for the first seven semesters. The deadline for receipt of applications and all required credentials, including results of the American College Test, is July 1 for the fall semester and December 1 for the spring semester. It may become necessary to close admissions at an earlier date if numbers of students admitted reach the maximum that can be accommodated. An application is processed as soon as possible after all required items are available. A notification of admission is then issued to the admissible student subject only to receipt of a final official transcript showing grades and credit for the senior year and the graduation date.

ADMISSION BY CERTIFICATE

The standard of preparation for admission to freshman status in the University is the 4-year high school course. High schools accredited by regional accrediting associations, state departments of education, or state universities, are recognized by the University of New Mexico. Graduates of accredited high

schools who meet qualitative requirements of the University may be admitted upon presentation of transcripts showing a minimum of 15 acceptable units. Graduates of unaccredited or partially accredited high schools who present transcripts which meet admission requirements in all respects except accreditation may become eligible for admission upon validating the unaccredited high school work by 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. Grades in all courses allowed toward high school graduation are computed in the average. The applications of students whose records do not meet the indicated requirements may be subject to review by the Committee on Entrance and Credits.

The University recommends that freshmen be at least 16 years of age.

SUBJECT MATTER PREPARATION. The University's essential concern is that the applicant be adequately prepared for successful participation in the college program he plans to pursue. A fixed pattern of subject matter is not prescribed, but the student is urged to include in his preparation a substantial number of the college preparatory courses available in his high school or preparatory school. 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 his college studies:

Engineering or Architecture. A student intending to major in either of these areas, in order to complete his prescribed curriculum without loss of time, should have completed at least two years of algebra, one year of plane geometry, and one-half year of trigonometry or college preparatory mathematics.

Mathematics and Statistics. For students planning to enroll in college mathematics courses, this department recommends completion in high school of at least 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 four years of English are recommended.

Nursing. This college strongly suggests completion of a minimum of 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 and chemistry, are recommended for prospective dental hygiene students and they should include in their preparation a well-rounded variety of subject areas.

Pre-Medicine, Pre-Dentistry, Sciences, Business and Administrative Sciences. Students planning to enter these or similar fields are advised to include in their high school programs at least intermediate algebra and plane geometry.

Latin American Studies. At least two years of high school Spanish are recommended.

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 applicant must have achieved an exceptional record on a minimum of fifteen units in an accredited high school, have the unqualified recommendation of his 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 is required before a decision is made.

ADMISSION BY EXAMINATION

A student 19 years of age or older who has not been graduated from high school may be admitted if he achieves a standard score average of 50 or above on the high-school-level General Educational Development tests or standard scores averaging 22 or above on the American College Test.

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.

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:

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 101L and 102L granted for scores of 3 through 5. Credit for Chemistry 121L and 122L granted only for scores of 4 and 5.

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

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

Mathematics. No credit allowed. Placement on basis of departmental examinations.

Modern Languages. 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.

The University's General Faculty has endorsed participation in the College Level Examination Program (CLEP) administered by the College Entrance Examination Board. UNM credit will be granted to newly admitted and regularly enrolled students who pass subject examinations of CLEP with scores of 45 or better. Credit for one or two semesters will be granted in courses (including associated laboratories) at the discretion of departmental chairmen in departments which have approved participation in the program. Persons interested should inquire for information at the Admissions Office.

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.

TRANSFERRING STUDENTS

HOW TO APPLY

Each new student who has attended other colleges or universities and who is seeking admission to an undergraduate college is required to file with the Office of Admissions and Records an application for admission (form to be obtained from that office) accompanied by the required Application Fee (see Application Fee). He should also request the authorities at each institution attended to send an official transcript of his record to the Dean of Admissions. The student who is applying with fewer than 26 semester hours of college credit acceptable by this University must also have sent to the Dean of Admissions his official scores on the American College Tests (see p. 103) and a complete official transcript of his high school work. No application will be processed until all required items, including the ACT scores where applicable, are on file.

A student currently enrolled in another institution at the time he makes application and applying for admission for the following session to one of the undergraduate colleges of this University should arrange to have forwarded to the Dean of Admissions 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 admission status will be made pending receipt of the final transcript, thus enabling the student to make definite his plans for transfer.

The student must indicate on the application all previous college attendance. An applicant is not permitted to ignore previous college attendance or enrollment even though he may prefer to repeat all of his previous college courses. A student found guilty of non-disclosure 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 any other reason to return to his last institution and who fails to report this immediately to the Admissions Office, will be subject to disciplinary action, including possible dismissal from the University.

Applicants seeking admission to the Graduate School, the School of Law, or the School of Medicine of this University are referred for admission requirements and procedures to those respective sections of this catalog and to the **Bulletin** of the respective School.

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 later than July 1 for the fall semester and December 1 for the spring semester. It may become necessary to close admissions at an earlier date if numbers of students admitted reach the maximum that can be accommodated.

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 p. 171).

The student who has completed 26, but fewer than 64, semester hours of acceptable college credit and who is found admissible but who has not met the special admission requirements of the degree-granting college of his choice may be required to enroll in the University College until he has 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.

ADMISSION PROCEDURE

When the application, Application Fee, all required credentials, and the ACT results (if applicable) have been received, the Office of Admissions will send to the applicant a notice of eligibility, or ineligibility, for admission. In some cases preliminary notice of eligibility will be issued prior to the final notice of admission. The final notice of admission will be accompanied by registration instructions, a room and board contract if the student requires dormitory accommodations, and medical forms.

An evaluation of the 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 the notification of admission has been issued. If the student receives his evaluation prior to registration, he should retain it for use during advisement.

REGULATIONS

The minimum qualitative requirement for University admission is a grade average of C in all previous college work. The applications of students whose records do not meet the indicated requirements may be subject to review by the Committee on Entrance and Credits.

A student under academic suspension from another college or university may not enter the University of New Mexico during the term of his suspension. Upon termination of the suspension period there is no bar to admission, if he 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 to make exceptions to the general policy when they seem to be justified.

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. A maximum of 6 semester hours of credit in courses in religion may be allowed provided content can be considered substantially literary, philosophical or historical. Courses in which grades of D are earned in other institutions are not acceptable for credit in the University of New Mexico.

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.

No credit is accepted from technical institutes which are not members of regional accrediting associations. Only credit earned in non-technical subjects is accepted from technical institutes which are accredited by a regional accrediting association.

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. Credit will not be granted for college courses carried either through extension or independent study or in residence at another institution of college level, when a student is enrolled for residence credit in this University, except upon prior written approval of the dean or director of the college in which the student is enrolled here.

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 whether he plans to attend in degree or in non-degree status. The degree student who, during his absence 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, thus enabling the student to make definite his plans for re-entry.

An applicant for readmission to the Graduate School, to the School of Law, or to the School of Medicine will have the required transcripts sent to the respective School.

Credit earned during suspension from this University will not be accepted for transfer, but 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 p. 171).

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 to which he is seeking readmission may be required to enroll in the University College until he has 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 (including hours with grade of Incomplete) or who have earned 64 or more academic semester hours.

NON-DEGREE STUDENTS

Persons wishing to pursue credit courses, either evening or daytime, without meeting the full requirements for admission to undergraduate status, may apply for non-degree status in the University's Community College provided the following qualifications are met:

The applicant must be at least 21 years of age, or must have been graduated from high school. (High school graduates who have not been out of high school for a year or more may not enroll in non-degree status, but should file formal application for degree status in the University.)

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 may not enroll in non-degree status.

A former student previously enrolled in regular status in an undergraduate college of the University should apply after an absence from the University for readmission to regular status. He should not apply for non-degree status.

It is not the policy of the University to permit students from other countries who are in the United States on a student visa to register in non-degree status.

The applicant who wishes to register in non-degree status is required to file a short application form with the Office of Admissions. These forms may be obtained from that office.

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 non-disclosure 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 any other reason to return to his last institution and who fails to report this immediately to the Admissions Office, will be subject to disciplinary action, including possible dismissal from the University.

The student registered in non-degree status is subject to all University regulations governing registration, attendance, and academic standing. Credit earned in non-degree status is recorded on the student's permanent record and may be applied in an undergraduate degree program when the student has satisfactorily established degree status by meeting the entrance requirements of the University and of the degree-granting college of his choice. Students in non-degree status who do not have a bachelor's degree or equivalent may not enroll in 500-600 level courses. Normally credit earned in non-degree status may not be allowed toward an advanced degree. 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 student is later admitted to the Graduate School, and (b) if his petition for such credit is approved by his major department and the Graduate School.

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 Community College.

THIRTY-HOUR LIMITATION ON NON-DEGREE STATUS

A student is permitted to earn a maximum of thirty semester hours of credit in non-degree status, except that a student who has previously completed a baccalaureate degree and who does not plan to work toward an advanced degree may petition the Committee on Entrance and Credits to earn hours beyond the normal thirty hour limitation. No undergraduate college of the University will accept in a degree program in 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. The student who does not have a baccalaureate degree and who is approaching the 30-hour limitation in non-degree status, if he wishes to continue taking courses for credit, should consult the Admissions Office concerning procedures required to establish regular degree status. If regular status is not attained, the student will be allowed to register in courses as an auditor only, receiving no credit.

Non-degree students applying for regular status are required to follow admission procedures and to provide all items requested of transfer students (see p. 107).

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.

GRADUATE STUDENTS

Refer to "Graduate School" and to the **Graduate School Bulletin.**

LAW STUDENTS

Refer to "School of Law" and to the **Law School Bulletin.**

MEDICAL STUDENTS

Refer to "School of Medicine" and to the **Medical School Bulletin.**

STUDENTS FROM OTHER COUNTRIES

The University admits qualified students who are citizens of other countries. The non-citizen is required, for visa purposes, to enter in regular status. He is, therefore, required to present, in addition to the application for admission: official certified transcripts from each secondary school attended; official certified transcripts from each college and university attended; American College Tests (ACT) scores, if applicable (see p. 103); official certifications 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 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 his admission procedure, the applicant should gather all credentials and send them in the same mail to the Dean of Admissions, except that TOEFL and ACT results are sent direct 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 the catalog in seeking admission to the University. For certification of eligibility for educational benefits under one of the Public Laws, he should make application to the Regional Office of the Veterans Administration in his home state. For the purposes of obtaining special services and for certifying your enrollment at the University of New Mexico, contact the Counseling Center. This step is necessary each term of your attendance in order to initiate your G.I. Benefits.

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 1 calendar year after January 31, 1955, must apply 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 he has completed 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 associations. 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 De-

velopment 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").

REGISTRATION

ORIENTATION AND ADVISEMENT

Summer orientation will be conducted for all new students admitted to the University for the fall semester. A number of sessions are planned so that groups will be small and students can be given personal consideration. The purpose of the program is to acquaint new students with the campus, to provide academic advisement and personal counseling when requested, and to familiarize them with educational programs and administrative procedures. There is also a special orientation session at the beginning of each semester.

The student who desires assistance with his academic program during the semester should request that his college office assign a faculty adviser, or he may seek assistance from the Office of Orientation and Advisement.

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.

TIME OF REGISTRATION

Students are urged to register during the periods set aside for registration (see University Calendar). A late registration fee is charged to each student who does not complete his registration during the specified periods. No student may enroll late in any course unless he has the permission of the instructor concerned and of the dean or director of the college in which he is enrolled.

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 FOR EDUCATIONAL DEFERMENT

A beginning college student is not eligible, under current Selective Service regulations, for educational deferment. A student who has previously had college deferment, however, may be eligible for continued deferment. Responsibility for requesting continued deferment rests with the individual. A student's request must be made in writing directly to his local board. A request for deferment must be renewed at the beginning of each school year. The University, at the student's request, will confirm his enrollment. A beginning student who is not eligible for educational deferment should not enter his Selective Service number on the Personal Data Information Form provided at registration. The

student who is eligible for continued educational deferment should enter his Selective Service number on the Personal Data Information Form at the time of registration if he wishes confirmation of his enrollment sent to his local board. The University's notification is not a substitute for the student's own written request for deferment. When a student feels there are special circumstances his board should know about his enrollment, he should consult with the Records Office in Scholes Hall. A draft-eligible male student should familiarize himself thoroughly with Selective Service regulations concerning educational deferment.

STUDENT RESPONSIBILITY

The University will hold the student responsible for completion of the courses for which he has been enrolled, unless he obtains approval for a change in his registration, or files an official withdrawal from the University.

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	
Students carrying 12 or more hours:	**N.M. Residents**	**Non-Residents**
Tuition and Fees[1]	$228.00	$642.00
Student Group Health and Accident Insurance Premium (optional)[2]	12.30	12.30
Total Tuition and Fees with Group Insurance	$240.30	$654.30
All students carrying 11 hours or fewer:		
Tuition and Fees, per semester hour	$ 19.00	$ 53.50

Law and Graduate

	Per Semester	
Students carrying 12 or more hours:	**N.M. Residents**	**Non-Residents**
Tuition and Fees[1]	$240.00	$654.00
Student Group Health and Accident Insurance Premium (optional)[2]	12.30	12.30
Total Tuition and Fees with Group Insurance	$252.30	$666.30
All students carrying 11 hours or fewer:		
Tuition and Fees, per semester hour	$ 20.00	$ 54.50

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

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.

Medical School

	Per Semester	
	N.M. Residents	**Non-Residents**
Tuition and Fees[1]	$315.00	$750.00

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

[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 8 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.

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, 87106. **Do not mail cash. To assure credit to the proper student account, it is mandatory that payment be accompanied by the Appointment for Registration form and the Cashier's Record form.** All payments must be accompanied by the student's name and social security number.

HOUSING FEES

See Catalog section "Student Housing."

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	5.00
Removal of Incomplete grade, per course	2.00
Examination to establish or validate credit†, per credit hour	2.50
Penalty for dishonored checks	2.00
Late ACT Testing	10.00
Graduate School Foreign Language Test	6.00
Miller Analogies Test	5.00
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
Architectural thesis fee	8.00
Law students' dues for N.M. Student Bar Association, per yr.	10.00
Engineering Co-op Fee	15.00
Mathematics 010	25.00
Mathematics 020	25.00
Home Economics 445L (Home Management)	50.00
Horseback Riding (PE 131)	35.00
Bowling (PE 137—8 weeks)	10.00
Bowling (PE 130—16 weeks)	20.00
Skiing (PE 141)—Payable to Tram and Ski Lift	
Ice Skating (PE 143)—Payable to Ice Arena	30.00
Chemistry Laboratory Breakage Deposit Card	10.00
Pharmacy Laboratory Purchase Card	5.00
Architecture Desk Damage Deposit	5.00
Applied Music (see "Courses of Instruction . . . Music")	
Mathematics 271 . . . fee equivalent to tuition for 1 sem. hr. is charged.	

GENERAL DEFINITION OF RESIDENT STUDENT FOR TUITION PURPOSES. A resident student is defined as a person who has been domiciled in New Mexico for not less than one year next preceding his registration for a term or semester and who can provide evidence satisfactory to the University of his or her intent to retain residence in New Mexico.

† Applies to college credit already earned in another college-level institution but not directly acceptable under University regulations.

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

The following general rules govern:

A Minor Student is entitled to resident student status upon proof of the bona fide residence in New Mexico of his, or her, custodial parent or guardian for the one year immediately preceding the student's registration.

An Adult Student is entitled to resident student status if he or she has maintained bona fide residence in New Mexico continuously for 12 months immediately preceding his or her registration and if he or she can provide evidence satisfactory to the University of intent to retain residence in the State. The residence of a married woman is determined by the residence of her husband.

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 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 home and provided he has not been enrolled for six or more semester hours in any session during that nine months period.

Armed Forces Personnel (and their dependents). A member of the U.S. armed forces assigned to active duty within the boundaries of New Mexico, or his spouse or minor child, 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. Information concerning documents required to support a claim to residence for tuition purposes on the basis of active duty military assignment is available in the Office of Admissions and Records.

Special Residence Problems. Persons who have special problems concerning residence should arrange for a conference with the Dean of Admissions and Records.

Changes in Residence Status. The New Mexico Legislature in the 1972 session passed the following:

No person who was classified as a "non-resident" for tuition purposes upon his initial enrollment in a public institution of higher education in this State shall have his status changed to that of a "resident" for tuition purposes unless he has maintained domicile in this State for a period of not less than one year during which entire period he has not been enrolled for as many as six hours, in any quarter or semester, as a student in any such institution. This restriction shall not apply to a married woman living together with her non-student husband.

BREAKAGE. The 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 p. 150 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 Constitution of the Associated Students. Copies of the Constitution may be obtained from the Office of the Deans of Men and Women.

GRADUATE STUDENT FEE. Graduate students are assessed a fee varying in amount depending on the number of hours taken, 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 pay all accounts due the University during one semester **before** registering for a new semester.

REFUNDS UPON WITHDRAWAL

When a full-time student withdraws voluntarily from the University during the 1st week of the semester, $5 of his tuition will be retained as a service fee. After the 1st week, registration fees will be refunded (where the student withdraws voluntarily) to the end of the 5th week of the semester as follows:

80% refund during the 2d week
60% refund during the 3d week
40% refund during the 4th week
20% refund during the 5th week

Students withdrawing after the 5th week of a semester, or those withdrawing at any time under discipline or because of academic deficiencies, will not be entiled to any refund. There is no refund for Math 010 or 020 after the second week of classes.

PROGRAM CHANGE. Five dollars is charged for each change of program form 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. There is no refund for Math 010 or 020 after second week of classes.

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	$228.00
Student health and accident insurance	12.30
Books and supplies	80.00
Board and room	540.00*
Clothing, laundry, misc.	253.25
Total, per semester	$1113.55

Non-resident students must add $414.00 per semester to the foregoing tuition.

* Semester average for school year (see p. 123).

STUDENT HOUSING

FACILITIES

THE UNIVERSITY operates residence halls for all students. All of these structures are modern, relatively new buildings with 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.

It is hoped that the housing services will be an integral part of the total educational experience provided by the University. Each hall is supervised by qualified staff skilled in counseling and in 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 a democratic type of group living.

To better provide for the individual educational needs of students, co-ed and non-co-ed housing is available. Details are contained in the housing materials which are sent upon request.

HOUSING POLICY

Undergraduate students may live either on or off campus. If the student elects to live on campus, he is required to sign a housing contract for at least one entire semester. First semester freshmen whose homes are not in Albuquerque must file the written consent of parents to live off campus with the Office of the Dean of Students.

Living quarters in residence halls are available to students with a minimum course load of eight (8) semester hours. 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 contracts and deposits.

GENERAL REGULATIONS AND INFORMATION

All students occupying rooms in residence halls are required by contract to take their meals at the University dining halls. Special diets are not provided.

The University will close its residence halls during the period between semesters. The halls must be vacated by noon of the first day following the close of Semester I and will be re-opened the day before Semester II Orientation period.

Spring residents must vacate their rooms no later than 24 hours after their last final examination unless they desire to participate in Commencement.

Residents will need to furnish their own bed pillow, blankets, and personal towels. Electric blankets are not permitted.

A resident may not charge long distance toll calls to his room telephone until he obtains a personal code number for this purpose from Mountain Bell Telephone Company. An application for the code number is mailed in advance to each resident or is available upon arrival.

Dogs or other pets are not permitted in University buildings or on University premises for sanitary reasons.

Any change in address should be reported immediately to the Records Office, which will in turn notify the Dean of Students and the dean or director of the college in which the student is enrolled.

Paid parking is available although spaces are very limited.

ADVANCE HOUSING DEPOSIT

RESERVATION FEE AND PERSONAL LIABILITY FEE

An advance deposit of $25.00 is required of all students who desire University accommodations. The deposit is retained by the University against possible losses or damages incurred by the resident for as long as the student remains in the residence halls.

FORFEITURE PROVISIONS

The deposit is automatically forfeited if a new applicant for housing fails to give notice of cancellation, or if notice of cancellation is received later than **July 31** in the case of a fall reservation, or **January 5** if the reservation is for spring. A fall resident renewing for spring must cancel no later than **December 5.** The deposit is also forfeited if a student does not claim his reservation by the first day of classes or if he fails to complete residence for the period of his room and board contract.

RESERVATION PROCEDURE

NEW AND READMITTED STUDENTS

When an applicant who has requested University housing has been found admissible, the procedures will be as follows:

1. The student will be sent Residence Hall and Room Assignment applications along with the room and board contract in advance of the session for which he has been admitted.
2. After reading the terms and conditions of the contract, the student should complete the applications (to include the signature of his parent or guardian if he is under 21 years of age) and return them with his advance housing deposit of $25.00 to the Housing Reservations and Collections Office.
3. When the student's completed applications and deposit are received, a residence hall assignment will be confirmed by the Housing Reservations and Collections Office as space is available.
4. In requesting a room assignment, the student should bear in mind that De Vargas and Laguna Halls will be reserved for returning upperclassmen.

STUDENTS CONTINUING IN ATTENDANCE

Students living in the residence halls during spring semester are given the opportunity to renew their housing reservations for the following year. Unless a

contract is renewed with the Housing Reservations and Collections Office by May 1, living space will be assigned to another student and the deposit balance will be automatically refunded by July 15.

CHANGES IN STUDENTS' PLANS

Should an applicant for admission or readmission to the University find it impossible to keep an advance reservation, he should notify the Dean of Admissions and notify the Housing Reservations and Collections Office in writing.

Any student whose hall reservation has been confirmed will receive a refund of his housing deposit if he cancels his reservation no later than July 31 for the fall semester or no later than January 5 for the spring semester.

ROOM AND BOARD FEES

To gain the maximum financial advantage of the room and board contract, students must remain in the halls for both fall and spring semesters. Students who are in residence for the fall semester are given the opportunity to extend their contract for room and board for the spring semester.

Rates include a $3.00 residence hall social fee for each semester. These rates do not provide for room and board between semesters or for meals during the official recesses listed in the Academic Calendar. All rates for University room and board are subject to change whenever necessary to defray operating costs.

All the foregoing rates for University housing for men or women provide for a telephone in each student room and University-supplied bed linens.

PAYMENT OF ROOM AND BOARD

Room and board is payable in advance to the Housing Reservations and Collections Office, La Posada 203. Payment may be made in full or in deferred payments as described below. A $5.00 fee is charged if the deferred payment plan is used or if payment is made after classes commence.

ROOM AND BOARD PAYMENT SCHEDULE 1972-73

	TYPE OF ROOM	
	DOUBLE	SINGLE
FALL SEMESTER		
One payment in full by August 1	**$615.00**	**$670.00**
or		
Deferred Payment Plan ($5.00 fee included)		
1st payment August 1	215.00	270.00
2nd payment September 1	135.00	135.00
3rd payment October 1	135.00	135.00
4th payment November 1	135.00	135.00
	TYPE OF ROOM	
	DOUBLE	SINGLE
SPRING SEMESTER—for FALL residents remaining in the halls		
One payment in full by January 5	**465.00**	**520.00**
or		

Deferred Payment Plan ($5.00 fee included)			
5th payment	January 5	$140.00	$195.00
6th payment	February 1	110.00	110.00
7th payment	March 1	110.00	110.00
8th payment	April 1	110.00	110.00
SPRING SEMESTER ONLY—For students entering halls for spring semester ONLY			
One payment in full by January 5		**540.00**	**595.00**
or			
Deferred Payment Plan ($5.00 fee included)			
1st payment	January 5	215.00	270.00
2nd payment	February 1	110.00	110.00
3rd payment	March 1	110.00	110.00
4th payment	April 1	110.00	110.00

NOTE: 5-day meal plan is $42.00 less per semester than above rate and excludes **any** meal service on weekends.

REFUND PROVISIONS

If a room and board contract is officially terminated, and a resident moves out of the residence hall before the end of either semester, room and board will be adjusted on the following basis:

Rent: The resident will forfeit his advance housing deposit and will be charged 10% of the total semester rate for each week or partial week of occupancy, beginning with the date of check-in.

Board: The resident will be charged for meals through the end of the week during which his formal check-out occurs, except for a student moving out during the last two weeks of a semester who will be charged the full semester rate for meals.

MEAL TICKETS

To the extent that facilities permit, students living off-campus or in fraternity or sorority houses are permitted to eat at the University dining halls. Information concerning rates and types of meal tickets can be obtained from the Housing Reservations and Collections Office, La Posada 203.

MARRIED STUDENT HOUSING

The University owns and operates 20 furnished one-bedroom apartments for married students. An applicant for this type of housing must be enrolled in the University of New Mexico as a full-time student. Apartment residents may remain in University housing during the summer months if they plan to re-register for the fall semester. No dogs or other pets are permitted.

FINANCIAL AID

THE STUDENT AIDS 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 Aids Office are: National Defense Education Act Loans, Nursing Student Loans, Cuban Loans, United Student Aid Fund Loans, Federal Guaranteed Loans, University Short Term Loans, The Federal Work-Study Program, The University Scholarship Program (both Academic and Athletic), and the Educational Opportunity Grant Program. The Student Aids Office is located in Building Y-1 (Air Force ROTC Building).

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 Aids Office.

The maximum amount available from this 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 him to have paid in full any previous loans which he has 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; 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 DEFENSE STUDENT LOANS

The National Defense Student Loan Program is one of the features of Public Law 85-864, the National Defense-Education Act of 1958. 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 June 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 Aids, Bldg. Y-1. Deadlines for applications are June 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 9 months after the student leaves school. Interest will be paid by the Federal Government while the student remains in school if his adjusted family income is less than $15,000 per year. The student must pay 7% simple interest during the payout period beginning the first day of the tenth month after he ceases to be a full-time student. Interested students should contact the Director of Student Aids, Building Y-1, 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 his adjusted family income must be less than $15,000 per year. 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.

Deadlines for applicants are July 1 for the academic year, or first semester, and November 1 for the second semester. Interested students should apply to the Director of Student Aids.

UNITED STUDENT AID FUND LOANS

The University of New Mexico has established a reserve with United Student Aid Funds, so that students may obtain low-cost, long-term bank credit. This reserve enables United Student Aid Funds to endorse bank loans made to needy

students by their hometown banks. The applicant applies to the loan officer at his hometown bank. Applications are available from either the bank or the Student Aids Office.

COLLEGE WORK-STUDY PROGRAM

The University participates in the College Work-Study Program established under the Economic Opportunity Act of 1964. 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 15 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 Aids, Building Y-1, for application forms and further information.

OTHER STUDENT EMPLOYMENT

Another opportunity for student employment is through the off-campus, part-time employment office, which is a division of the Student Aids Office. These jobs are filled regularly and the average rate of pay is $1.60 an hour. Most of the positions for women are in sales and secretrial positions while jobs for male students range from draftsman to delivery and warehouse work. Off-Campus Employment Service Program cannot place a person in a job before his arrival on campus since most jobs must be filled immediately upon receipt from the employer. Positions are posted with a job description, hours open for work and salary. The student can work as many or as few hours 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 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, and (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 his 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 N.E., Suite 102, Albuquerque New Mexico; Northeast Heights Office, Oil Center Building, 117 Richmond N.E., Albuquerque, New Mexico; 216 Washington Avenue, Santa Fe, New Mexico; 200 West First Street, Roswell, New Mexico; Dennison Building, 1480 N. Main Street, Las Cruces, New Mexico; 207 East Broadway, Farmington, New Mexico; P.O. Box 1388, Las Vegas, New Mexico; P.O. Box 1847, Taos, New Mexico; 1095 North Canal, Carlsbad, New Mexico; 421 Connelly, Clovis, New Mexico; 211 West Mesa, Gallup, New Mexico; P.O. Box 00, Espanola, New Mexico; 808 Pinos Altos, Room 8, Silver City, New Mexico. 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.

Announcements of awards for scholarships, prizes, medals, and certificates are made after approval by the Faculty Scholarships, Prizes, and Loans Committee. Information on all scholarships and awards may be obtained from the University Student Aids Office.

Students holding University sponsored scholarships must reapply for them each semester. Deadlines are June 1 for the fall semester and November 1 for the spring semester.

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 Aids 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 Aids Office. High school seniors may also obtain forms from their high school counselors or principals. April 1 is the deadline for applying 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; and (4) the recommendation of the student's counselor or principal (in the case of freshman applicants).

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 $300 to $800, 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, books, and $135.00 per year for incidental expenses.

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.

A listing of the scholarships and prizes available to University of New Mexico students follows.

EDUCATIONAL OPPORTUNITY GRANTS

The University of New Mexico, under provisions of the Higher Education Act of 1965, PL 89-389, awards several 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 his 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 Aids, Bldg. Y-1, for application forms and further information.

Scholarships open to Freshmen and Upperclassmen are listed first followed by Freshmen only and Upperclass only. Each section is divided into College or Department except those not specified or one of a kind, which are listed as Miscellaneous.

FRESHMEN AND UPPERCLASS SCHOLARSHIPS

Miscellaneous

Albuquerque Breakfast Lions Club Scholarship. A $200 annual scholarship given to a student who suffers a handicap of vision not correctable to a reading level. Recipient may be resident or non-resident.

The Albuquerque Downtown Lions Club Scholarship. The awards cover full tuition costs for instate students. The recipients must be graduates of New Mexico high schools, must signify their intention of taking, or must be pursuing, a course in the field of physical therapy. They must show need for financial help and have demonstrated ability to do college work.

The Albuquerque Veterinary Practitioners Association Scholarships. Two $250 scholarships will be awarded annually to applicants demonstrating financial need and/or expressing interest in the study of veterinary medicine. Selection of the recipients shall be left to the Committee on Scholarships, Prizes, and Loans. Recipients may be freshmen or upperclass.

American Business Women LaJolla Chapter. A $100 scholarship awarded by semester to a freshman or sophomore woman who will enter the field of Business Education, Special Education, or therapy of handicapped persons. Scholarship is based on financial need and is renewable. Selection is made by chapter.

John W. Baker Memorial Track Scholarships. A $2500 annual track scholarship donated by Mr. and Mrs. Don Kirby in memory of John W. Baker, former track star at the University of New Mexico. Selection will be made by UNM Track Coach Hugh Hackett. Amounts of scholarships and number of awards will vary at the discretion of selection chairman.

The Clayton C. and Agnes May Barber Memorial Scholarships. A trust fund established in 1956 by the wills of the late Clayton C. Barber, former employee of the University, and of his wife, Agnes May Barber, provides scholarships for children of the employees of the physical plant.

The Thomas S. and Louise Freeman Bell Scholarships. Income from a trust fund is used for scholarships for worthy students. The purpose of this gift is solely to help promote and encourage among the students a higher grade of scholarship and application to studies.

The Vera Darnall Memorial Student Assistance Fund. A short-term student assistance fund established by friends in memory of the late Mrs. Vera Darnall, Administrative Assistant to the Director of Admissions and Registrar at the University of New Mexico. The fund is to be used for students with financial need and is administered by the Office of Student Aids.

The Joe Feinsilver Student Assistance Fund. Mr. Feinsilver set up a $36,000 trust, income from which is to be used to help students in financial need. The program is administered through the Student Aids Office.

Bertha B. Hollis Scholarships. A trust fund as provided in the will of Bulah Ruth Thomas for several scholarships annually for Indian students. Selection to be made by Director of Student Aids and UNM Kiva Club.

The Daniel C. Jackling Scholarships. Income from a trust fund is used for scholarships for worthy students. The purpose of this gift is solely to help promote and encourage among the students a higher grade of scholarship and application to studies.

The Gloria Keating Memorial Foreign Student Assistance Fund. A short-term assistance fund established by friends in memory of the late Mrs. Gloria Keating, Foreign Admissions evaluator in the Admissions Office of the University. The fund, administered by the Office of Student Aids, is to be used for foreign students with financial need.

The Kirtland Air Force Base Officers' Wives Scholarships. Two $500 scholarships awarded annually to a freshman and/or upperclassman of any Armed Services personnel assigned to Kirtland Air Force Base or to children of retired, active, POW's, MIA's, or deceased Air Force personnel living in the immediate area. No discrimination regarding race, color, or creed. The recipients are selected on the basis of their academic achievement, recommendations, and citizenship, and may attend any college or university in the United States. Type of courses and number of class hours will also be taken into consideration. Award is renewable if academic achievement is outstanding.

The Kiva Club Scholarships. A few tuition awards are made to Indian students each year by the University of New Mexico Kiva Club.

The Kiwanis Club of Highland Scholarship. The Kiwanis Club of Highland each year awards a year's tuition scholarship to a deserving student who is a resident of Albuquerque.

Pueblo of Laguna Scholarship. The governing body of the Pueblo has established a scholarship fund to assist students who are members of the pueblo to obtain their college education. The size of the award varies according to the student's needs. Final selection is in the hands of a committee set up by the Governor of the Pueblo. Applications can be obtained directly from the Pueblo Governor's Office.

The Robert H. Lawrence, Jr., Scholarship Fund. Sponsored by the Albuquerque Alumni Chapter of Omega Psi Phi Fraternity, it is used to provide tuition, insurance, and books for a deserving high school graduate from the Albuquerque area for his freshman year at the University of New Mexico. The recipient must be a member of a minority group (Afro, Indian or Spanish American) who possesses high potential in his selected field of study, and who is not able to obtain either an academic or athletic scholarship from other sources. Additionally, he must have a bona fide need for financial assistance. The Scholarship Committee of the fraternity's Albuquerque Alumni Chapter will select the recipient through interview and application information; the committee will also ascertain that the candidate's financial need is genuine.

The Gladys Milliken Student Assistance Fund shall be used through short term loans to assist junior and senior women students in the Department of Health, Physical Education and Recreation in completing their education.

National Merit Scholarship. A supplemental grant to the public colleges attended by National Merit Scholars for assistance to students who are not Merit Scholars. For National (unsponsored) Merit Scholars the grant is $100 a year, up to a maximum of 20 annual grants at any one college.

The Osoff Loan Fund. An organization of Albuquerque women grant financial assistance in the memory of Frieda Osoff, prominent Albuquerque humanitarian and philanthropist. The aid is in the form of a loan available to a varied number of students and is granted on the basis of need and scholastic ability. Applications may be obtained at the Student Aids Office with the selection of recipient and amount of award determined by the organization.

Phelps Dodge Corporation Scholarships. Two $500 scholarships awarded annually by Phelps Dodge Corporation. Preference shall be given to dependents of the Phelps Dodge Corporation. Selection to be made by UNM Student Aids Office.

The Police Recorder Scholarship Fund. A $1,000 annual scholarship for sons or daughters of New Mexico law enforcement officers. Applicants for the scholarship must furnish proof by a letter signed by the parent's employer. The selection of one or two recipients annually will be at the discretion of the Student Aids Department following the normal scholarship standards.

Lester B. Reeder Scholarship. A trust fund provides for scholarships to assist deserving students that actually need financial aid. Selection by Student Aids Office.

Sandia Base Woman's Club Scholarships. The Sandia Base Woman's Club awards two $250 tuition scholarships, one for an entering freshman and the other for a second-year student. The awards are to be made on the basis of financial need and scholarship. Students applying for the scholarships must be legal dependents or wards of Armed Forces personnel attached to Sandia Base, or of personnel employed at Sandia Base by the Sandia Corporation, or of personnel employed at Sandia Base by A.E.C.

The Santa Fe Motor Company Scholarship. The scholarship is awarded to a dependent of an employee of the Santa Fe Motor Company covering full tuition, fees, and board and room.

Sam Stratton Scholarship. Granted by the New Mexico High School Coaches Association in the name of Sam Stratton, former coach and president of the Coaches Association. Recipient must be physically handicapped, attend a New Mexico college or university and show financial need. Application may be made through local high school coach.

Woodward Trust Scholarships. Several scholarships given annually to assist deserving students of the University of New Mexico. These scholarships provided for in a trust established by Hugh B. and Helen K. Woodward. Selection to be made by UNM Student Aids Department.

Engineering

The Associated General Contractors of New Mexico Scholarships. The Associated General Contractors of New Mexico present a number of scholarships yearly to Civil Engineering students. These scholarships are in the amount of $200.00 per year for 4 years and may be granted to freshmen at the University of New Mexico or at New Mexico State University.

Music

Band Grant-In-Aid. Awards of $100 made to students selected by the Music Department to participate in the University of New Mexico "Pep" Band.

Nursing

The Osoff Nursing Loan Fund. A short-term loan fund has been established by an organization of Albuquerque women in the memory of Frieda Osoff, prominent Albuquerque humanitarian and philanthropist. No interest rates are charged with individual stipulations established for re-payment of loans. Applicants may apply through the College of Nursing.

FRESHMAN SCHOLARSHIPS

Miscellaneous

American Legion Auxiliary Department of New Mexico Scholarship. A $100 scholarship is given to the finalists in the American Legion Department Oratorical Contest.

The Philo S. Bennett Scholarship. The income from a trust fund of $1,200 is awarded annually to a woman student, at the beginning of the second semester of her freshman year, who is most worthy, who has resided in New Mexico for at least the preceding 4 years, and who will continue as a resident student in the University.

The Burkhart-Parsons Memorial Scholarships. The income from a trust fund established by the late Mrs. Miriam P. Burkhart provides approximately $800 for scholarships to be awarded annually to freshmen students who are graduates of the Albuquerque public schools. The scholarships are awarded for Semester II of the current academic year.

The T. T. Castonguay Scholarship. The income from a trust fund of $12,000 is awarded to worthy second semester freshmen interested in Chemical Engineering to encourage scholarship.

The James M. Doolittle Memorial Scholarship. The interest from a trust fund of $1,000 established by Mrs. J. M. Doolittle in memory of her husband, Mr. James M. Doolittle, is awarded each year to a student who has made a high scholastic average in a New Mexico high school, who enters the University of New Mexico as a freshman, and who is in need of financial assistance.

The General Motors Scholarship. A scholarship sufficient to supplement fully the resources of the student so that he will be assured of 4 years of college is made available semi-annually to an entering freshman by the General Motors Corporation. The award is made by the University.

The Simon and Maud Herzstein Scholarship. Awarded to a legal resident of Union County, New Mexico, who has demonstrated qualities of character and intellect which will enable him to lead a life of useful, devoted, and cheerful service. Recipient is designated by Committee on Scholarships, Prizes, and Loans at end of freshman year; scholarship awarded at beginning of Semesters I and II of sophomore year.

The Frederick Herbert Kent and Christina Kent Scholarships. Three scholarships are awarded annually to high school students, residents of the State, on the basis of high school grades, recommendation of the principal, and financial need.

Kiwanis Club of Sandia Scholarship. A scholarship awarded by the Sandia Kiwanis Club to a member of the Highland High School Key Club. The award is for $300 and goes to a young man who has shown leadership ability, good citizenship, and has established a good high school record.

The Louis A. McRae Scholarship Fund. Established in the name of Mr. Louis A. McRae, a pioneer of New Mexico and long-time friend of the University of New Mexico, the income from a trust fund is awarded to a first-semester freshman, resident of New Mexico.

The New Mexico Philosophical Society Tuition Scholarship Essay Contest. New Mexico high school students may win a tuition scholarship for one year at one of five state institutions of higher learning by writing an essay on "the doctrine of human equality." The contest is sponsored jointly by the Philosophical Society and the five schools.

Monica A. Novitski Scholarship. Awarded to a first year dental hygiene student with financial need and scholastic ability. Selection is made by the Director of the Dental Hygiene Programs.

Dr. Joseph Franklin Schoen Scholarship. A tuition scholarship established by the Contractors' Equipment and Supply Company in honor of Dr. Schoen. The award goes to an entering freshman in any of the professional colleges of the University. Selection of the recipient is based on scholastic ability and need for financial assistance.

Arts and Sciences

Helene Wurlitzer Foundation of New Mexico Arts and Sciences Scholarship. A resident tuition scholarship awarded by the Wurlitzer Foundation is made to a Taos High School graduate who will enroll in the College of Arts and Sciences here at the University. The recipient is recommended to the Foundation by the principal of Taos High School.

Engineering

The Caroline Thornton Carson Memorial Scholarship. The income from a trust fund of $20,000 established by Mr. James G. Oxnard and Mr. Thornton Oxnard in memory of their mother provides a scholarship for a freshman engineering student who has high academic record, and who is of high moral character and in need of financial assistance. There shall be no restrictions as to race, color, religion, or sex.

The Contractors' Equipment and Supply Company Scholarship. A tuition scholarship established by the above company for an entering freshman who intends to major in engineering. Selection of the recipient is based on scholastic ability and need for financial assistance.

Home Economics

American Home Economics Association, College Chapter. Each year the Home Economics Club awards a $100 scholarship to a major in Home Economics. Recipient must be a second semester freshman member of the club, show financial need, and have a grade-point average of 2.5. Selection is made by donor.

Music

The Music Performance Awards. From the proceeds of departmental concerts, the faculty of the Department of Music in 1956 established a number of awards to be given freshman students

on the basis of auditions conducted among New Mexico high school seniors in piano, voice, stringed instruments, and wind instruments, the judges to be faculty members of the Department of Music. The scholarships are paid in two installments; in order to receive the second half of his scholarship a recipient must maintain creditable grades as defined by the Department of Music. Interested high school seniors may obtain information about auditions from the Department of Music.

Nursing

The Allstate Insurance Company Foundation Scholarship in Nursing. The recipient is to be a first-year nursing student selected on the basis of financial need, interest in a nursing career, and scholastic ability. Preference will be given to students who have residence in New Mexico, or secondly, in the Rocky Mountain states.

The Jessie Smith Noyes Foundation Scholarship. Merit type scholarships for graduating seniors of New Mexico high schools who are entering the field of nursing. Scholarships are renewable based upon grades and financial need.

Speech

The Department of Speech Forensic Scholarship for Freshmen. A scholarship awarded annually to a worthy freshman. The basis for awarding the scholarship is forensic excellence, good scholarship, and need. The Department of Speech is to make recommendations to the Scholarships, Prizes, and Loans Committee.

FRESHMAN AWARDS AND PRIZES

High School Achievement Award. Presented to entering freshmen from the UNM Alumni Association and Greater University of New Mexico Fund on the basis of scholastic achievement and recommendation of their high school principals.

Kappa Alpha Theta Poetry Awards. To stimulate interest in creative writing, Kappa Alpha Theta annually presents awards in amounts of $15 and $10 for the two outstanding poems presented to the English Department.

The Kappa Kappa Gamma Alumnae Memorial Prize for Poetry. An annual prize of $25 to be awarded as a first prize for poetry in the undergraduate literary contests in the English Department. This prize was established by the Kappa Kappa Gamma Alumnae Association in memory of all deceased members of the Association and of the New Mexico Chapter of Kappa Kappa Gamma.

The Phi Kappa Phi Freshman Prizes. Cash prizes of $25 are awarded to the man and woman who, while carrying a full-time course of study, rank highest in general scholarship for the freshman year.

UPPERCLASS SCHOLARSHIPS

Miscellaneous

Air Force Reserve Officers Training Corps Cadet Scholarships. Two scholarships, in the amounts of $100 and $50, are awarded annually to cadets in AFROTC. The awards are based on academic ability, leadership, and financial need.

Albuquerque Beta Sigma Phi. A $1000 scholarship to be given to a sophomore, junior or senior female student majoring in the field of her choice with preference going to a daughter of a Beta Sigma Phi member. Scholarship is given in two equal payments of $500 per year for a period of two years. Recipient must be a resident of the state of New Mexico and maintain a 2.5 grade point average while receiving the scholarship. Selection is made by the Committee on Scholarships of the Student Aids Office.

Albuquerque Chapter of the National Secretaries Association Scholarship. An annual award of $150 made to a female student at the University. Selection of the recipient is made by the association.

The Albuquerque City Panhellenic Scholarship. Each year the Albuquerque City Panhellenic provides a scholarship for a Greek woman student who has earned a minimum of 30 semester hours, who has creditable scholarship, and who has need of financial assistance.

The American Association of University Women Scholarship. A $200 scholarship granted by the Albuquerque branch of the A.A.U.W. to promote advanced training for women. It is given to a graduate woman student, selected on the basis of scholarship, financial need, and ability as indicated by recommendation from professors.

The Ballut Abyad Scholarship. The interest from a trust fund of $2,500 is given annually to either a man or woman student at the University of New Mexico who is in need of financial assistance.

The Eva Boegen Newman Center Memorial Scholarships. Two $50 scholarships awarded annually by the Aquinas Hall Newman Center in memory of Mrs. Eva Boegen, one to a student who maintains at least a B average and has financial need, and one to a student who maintains at least a C average and has financial need. (See also the Eva Boegen Newman Center Prize listed below.)

Lena C. Clauve Scholarship of the Maia Chapter of Mortar Board. A scholarship established in honor of Lena C. Clauve by the Maia Chapter of Mortar Board. It is to be awarded to a woman student who has completed 3 semesters of creditable work at the University and is in need of financial assistance. The recipient is selected by a special Mortar Board Committee.

The Lou Beverly Damron Memorial Scholarship. At least $100 of the proceeds from a trust fund established by the parents of Lou Beverly Damron, Class of 1952, as a memorial to their son, is awarded annually to a member of Sigma Chi Fraternity above the rank of freshman who has the highest scholastic record during the year.

El Encanto Chapter of the American Business Women's Association. Tuition scholarship awarded each semester on the basis of financial need. Applications may be obtained at the Students Aids Office with selection of recipient determined by the organization.

The Edward Grisso Memorial Scholarship Fund. A trust fund established by Mr. W. D. Grisso of Oklahoma City as a memorial to his son provides a scholarship each fall for a junior male student who has made the most improvement in grades during his sophomore year over his freshman year. The recipient is selected by a special advisory board.

The Lena Heath Memorial Scholarship. Income from trust fund established for educational scholarships to be used for students who have demonstrated serious purpose and ability by satisfactorily completing at least two years of their college work.

The Gwinn Henry Memorial Scholarship Fund. A $500 fund established by the University of New Mexico Alumni Letterman's Association as a memorial to the late Coach Gwinn Henry is used to assist in the education of a worthy student athlete who is regularly enrolled at the University of New Mexico.

Russell E. Herbert Memorial Scholarship. Granted by the Mesa Lodge #68, Ancient, Free and Accepted Masons of New Mexico, a tuition scholarship for one year for a deserving student of high moral character and graduate of an Albuquerque high school. Recipient is selected by the Mesa Lodge #68.

The Kappa Kappa Gamma Memorial Scholarship. A scholarship of $210 is given each year by Kappa Kappa Gamma Sorority to a woman student who has earned a minimum of 30 semester hours at the University of New Mexico, who has creditable scholarship, and who has need of financial assistance.

The Kennecott Copper Corporation Scholarships. The Chino Mines Division provides a number of $500 scholarships to students in New Mexico institutions. Two of these scholarships are awarded to students who are sophomores or upperclassmen at the University, who are majoring in certain specified fields, who have acceptable scholarship and financial need, and who are recommended to the Chino Mines Scholarship Committee by the University through the Scholarships, Prizes, and Loans Committee.

Las Campanas Scholarship for Junior Women. Four $100 scholarships to be awarded to junior women for the year without regard to field of study, race, religion, or residency. Selection is based upon grades and financial need, with consideration of campus and community activities.

Marshall Scholarships. These are offered by the British Government in gratitude for the Program for European Recovery. Graduating seniors and graduate students of either sex under 26 years of age are eligible for the 24 new awards made annually. The scholarships are for two years, and may be extended for a third year. They are tenable in any university in the United Kingdom for study leading to a degree in any field. The stipend covers tuition, fees, transatlantic passages, and a maintenance grant of $1,540.

The Abraham Lincoln Mitchell Scholarship. Miss Dorothy Coulter of Albuquerque has established a trust fund in the amount of $4,000 in honor of Abraham Lincoln Mitchell. The income from this fund is to be awarded to a man or woman student of the University of New Mexico who has completed the freshman year of college. First consideration will be given second or

third-year students in the School of Law. Students interested in the field of race relations will be given special consideration.

The New Mexico Petroleum Industries Scholarships. Each year the N.M.P.I.C. awards two scholarships of $250 to students of the six state institutions.

Pi Beta Phi Arrowcraft Scholarship. An annual scholarship is awarded to a University of New Mexico student, either a graduate or undergraduate, for summer study in Gatlinburg, Tennessee. Credit is given through the University of Tennessee. The program includes concentrated study in all major areas of crafts. The award covers room, board and tuition and is awarded in the spring.

Residents Housing Council Scholarships. Two annual scholarships, each in the amount of $300, will be available to dormitory residents. One scholarship will be awarded to a female student, the other to a male student, upon the recommendation of the Residents Housing Council.

The Rhodes Scholarship. The trustees of the will of Cecil Rhodes provide for a maximum of 32 scholars each year, each scholar to receive an honorarium of $2,000 per year and to study 2 or 3 years in Oxford University, England. Early in the fall semester a representative of the University nominates candidates to the state committee for selection. This committee may select 2 men to represent the State of New Mexico before the district committee, which in turn selects no more than 4 scholars to represent the 6 states which compose a district. The scholarship is for graduate students and applications should be directed to the Graduate School.

The Wilma Loy Shelton International Fellowship for Women. This annual fellowship, established in 1951 by The University of New Mexico Chapter of Mortar Board, senior women's honorary society, to promote international understanding through the education of women leaders, awards $400 provided by the active chapter of Mortar Board plus tuition and fees provided by the University to a foreign woman student, preferably in the Graduate School, to be chosen by a special committee.

Sigma Chi Mothers Club Scholarships. Two $120 scholarships, one to be awarded in the spring semester and one in the fall, to members of the Sigma Chi Fraternity who are above the rank of freshman, have financial need, and have satisfactory scholarship.

The Elizabeth P. Simpson Scholarship. A scholarship equal to one semester's resident tuition given each year by Chi Omega Alumnae of Albuquerque in honor of Mrs. Elizabeth P. Simpson, Professor Emeritus of Home Economics and Chi Omega member. The award is granted to a woman student who has earned a minimum of 30 semester hours at the University of New Mexico who has creditable scholarship, and is in need of financial assistance.

Student Affairs Scholarships. An amount equal to full resident tuition given in the name of the Vice-President for Student Affairs, to the elected President and Vice-President of Associated Students of the University of New Mexico. These scholarships are to be awarded during the year of service.

University Dames Club Scholarship. A scholarship is awarded annually by the University Dames Club to an active member or the husband of an active member of the Dames Club. Recipient must be a full-time student.

University Golfer's Association Scholarship. A $375 scholarship is given to a student participating in the intercollegiate golf program of the University. The recipient will be selected by the coach of the golf team, who will make his recommendation to the Scholarships, Prizes, and Loans Committee of the University.

Eric L. Williams Memorial Scholarship. The University of New Mexico Golf Course has established in memory of Eric L. Williams an annual scholarship consisting of tuition and fees, awarded to a student active in the collegiate golf program.

Archaeology

The Archaeological Society of New Mexico Scholarship. A scholarship is awarded to a student majoring in archaeology. The recipient of this scholarship will be selected by the members of the Department of Anthropology.

Architecture

John J. Heimerich Scholarship. A scholarship established in honor of John J. Heimerich by the Albuquerque Chapter of the American Institute of Architects. A $350 tuition scholarship is awarded annually to a promising student who has graduated with a Bachelor of Fine Arts with a major in Architecture degree, and who is continuing in the graduate program in architecture at the University of New Mexico.

Albuquerque Gravel Products Scholarship. A $250 tuition scholarship is awarded annually to a student in the graduate program in architecture who has received his first degree from another school.

Alumni and Friends of the Department of Architecture Grants-In-Aid. Annually, the organization, Alumni and Friends of the Department of Architecture, sets aside varying amounts for grants-in-aid for students in need of financial assistance.

Charles D. Jack Scholarship. Dividends earned from a fund established by Mr. Charles D. Jack are awarded annually to an undergraduate student in the form of a loan to be awarded to a student who has financed his own education through his own or through parental efforts for the first three years of his schooling. The loan is without interest.

Kinney Brick Company Scholarship in Architecture. The Kinney Brick Company of Albuquerque, New Mexico, has established two awards of $250 each for students in the architecture program. One tuition award of $250 is awarded to an undergraduate student in need of financial assistance; and the second tuition award of $250 is awarded to a student in the graduate program, who has need of financial assistance.

New Mexico Concrete Masonry Association Award in Architecture. Dividends earned from a fund established by the New Mexico Concrete Masonry Association awarded annually as a tuition scholarship to an undergraduate student in need of financial assistance.

Lumber Merchandisers Association Scholarship. A $100 tuition scholarship is awarded annually to an undergraduate student in need of financial assistance.

Hydro Conduit Corporation Scholarship in Architecture. One semester's tuition is awarded to a resident student studying at the graduate level for his professional degree in architecture. The nominee shall have attained a grade point average not less than 2.5 in his work for the baccalaureate degree.

Drawing Scholarship. A $50 scholarship, to be awarded to a student who shows outstanding ability in architectural drawing.

American Landscape Foundation. A tuition scholarship in the amount of $100 will be awarded each year to a foreign student in architecture.

National American Institute of Architects Scholarships. Annually the National AIA, Washington, D.C., offers scholarships in variable amounts to outstanding students in architecture who need financial assistance to continue their education.

AIA/Ford Architectural Scholarship Program. A program for disadvantaged minority group persons, who have no previous college experience, sponsored by The American Institute of Architects and The Ford Foundation.

Upperclass Awards and Prizes

The Architectural Design Faculty Awards. Three prizes, each consisting of a current architectural book, are awarded annually to the outstanding second year, third year, and fourth year student in architecture.

Reynolds Metals Company Competition. An annual award of $250 to the student submitting the best original design for a building component in aluminum.

Medals and Certificates

AIA School Medal Award for General Excellence in Architecture. The American Institute of Architects Medal is presented annually to an outstanding student graduating with the Masters degree in Architecture.

AIA Certificate. The AIA Certificate for excellence in Architecture is presented annually to an outstanding student in Architecture.

John Gaw Meem Medal. The John Gaw Meem Medal is presented annually to a student graduating with a Masters in Architecture degree for excellence in design.

Tom Popejoy Medal. The Tom Popejoy Medal is presented annually to a graduating fourth year student who has been an outstanding student in architecture.

Arts and Sciences

The George A. Kaseman Memorial Scholarship. A trust fund established by Mrs. George A. Kaseman as a memorial to her late husband, to perpetuate his interest in the development of New

Mexico by aiding young people in obtaining a university education, provides an annual scholarship of $750 or more to be awarded to a student in the College of Arts and Sciences, preferably a resident of New Mexico, who shall rank in the upper one-fifth of his high school graduating class and who shall have economic need for this scholarship.

Botany

Gertie May Barnes Memorial Scholarship. Presented by the New Mexico Iris Society an award of $125 to a senior or graduate student in the field of botany.

The Dora Lewis Sanders Scholarship. An annual scholarship of $100 established by the New Mexico Federation of Garden Clubs in 1951 is awarded to a junior or senior student majoring in botany.

Business and Administrative Sciences

American Business Women La Jolla Chapter. A $100 scholarship awarded by semester to freshman or sophomore female who will enter the School of Business or Special Education or therapist of handicapped persons. Scholarship is based on financial need and is renewable. Selection is made by chapter.

Albuquerque Legal Secretaries Association Scholarship. The scholarship in the amount of $100 is awarded to a female student enrolled in the School of Business and Administrative Sciences. The award may be made to the same student in successive years. Preference may be given to a student who plans to stay in New Mexico after graduation. Financial assistance must be a factor in making the selection. Recipient shall be selected by the Committee on Scholarships, Prizes, and Loans upon the recommendation of the Dean of the School of Business and Administrative Sciences.

The Sam Angell, Jr., Memorial Scholarship in Business Administration. A $250 scholarship awarded each semester by the New Mexico Association of Independent Insurance Agents, Inc., to a junior or senior in the School of Business and Administrative Sciences who desires to pursue insurance industry as an independent agent; selection to be made by Dean.

Auxiliary of the New Mexico Society of Certified Public Accountants Scholarship. The award is given to a senior man or woman on the basis of academic standing in the School of Business and Administrative Sciences. The scholarship is for $200 for one semester only. Organization requests a brief letter expressing why applicant is interested in the field of study to accompany application. Applications are supplied by the Dean of the School and selection is made by the auxiliary.

The Credit Women's Breakfast Club of Albuquerque Scholarship. This scholarship of $50 is awarded to a woman student in the School of Business and Administrative Sciences upon recommendation of the Dean of that School.

Ernst & Ernst Accounting Firm Scholarship. A $500 scholarship to a full-time student majoring in accounting, either an undergraduate at the upperclass level, or a graduate student working for a master's degree. Selection will be made by the School of Business and Administrative Sciences through the scholarship committee.

The Alonzo Bertram McMillen Memorial Scholarship. The Occidental Life Insurance Company established this scholarship as a memorial to the late Alonzo Bertram McMillen, a founder of the company, to cover the cost of room, board, and tuition. The scholarship is awarded annually to a student in the School of Business and Administrative Sciences who is a resident, is of excellent character, shows active interest in good citizenship and in general student activities, has an average academic record, and is in need of financial assistance.

George J. Neff Scholarship in Accounting. A resident tuition scholarship awarded annually for Semester II in memory of Mr. George J. Neff, CPA, founder of Neff & Co., the New Mexico firm of certified public accountants.

The New Mexico Society of Certified Public Accountants Scholarship. Awarded on basis of a competitive examination. Information available at the Student Aids Office.

The Southern Union Gas Company Scholarships. Three scholarships of $500 each, one for a student in the School of Business and Administrative Sciences and two for students in the Department of Mechanical Engineering. Recipients must be male students, preferably juniors or seniors. They shall be of good character and proven ability and shall be in need of financial assistance.

Drama

The University Theatre Training Scholarship. The Department of Theatre Arts provides a scholarship of $150 each semester which is awarded in the spring of each year upon recommendation of the faculty of the Department on the basis of need, scholarship, and suitability for the training involved.

Education

The Albuquerque Classroom Teachers Association Scholarship. A scholarship awarded annually to a student in the College of Education who is preparing to teach in the elementary schools of New Mexico.

The Alpha Delta Kappa—Gamma Chapter Scholarship. A $50 annual scholarship to be given to a woman in her junior or senior year who is training to become a teacher.

Bandelier Parent-Teacher Association Scholarship. Awarded for the second semester to a junior or senior in the College of Education. The recipient shall have indicated a sincere desire to enter the teaching profession, be of high moral character, have a high academic standing and financial need.

The Bernalillo County Council of Parent-Teacher Association Scholarships. Several annual scholarships of $250 each have been provided for juniors or seniors in the College of Education preparing to teach in the elementary schools of New Mexico.

Ward Curtis Scholarship Fund. An award of $200 granted by the New Mexico State Congress of Parent-Teachers Association to an upperclass student in Education and a graduate from a New Mexico high school. Need, scholastic ability, and devotion to ideals of democracy and education shall be stipulations to this award.

The Daughters of Penelope Memorial Scholarship. An annual scholarship in the amount of $50 established in memory of all deceased members of the Helen of Troy Chapter 19, to be awarded to a man or woman student who is a resident of New Mexico and who plans to teach in the elementary or secondary schools. Scholarship and need are determining factors.

Delta Kappa Gamma Grant-in-Aid in Education. A scholarship of $75 awarded for the spring semester by the Albuquerque Chapter of Delta Kappa Gamma Society, an international honorary for women educators. The recipient must be a junior or senior in the College of Education who needs financial assistance.

The Duke City Business and Professional Women's Club Scholarship. A scholarship of $200 is awarded annually to a sophomore or junior woman student in the School of Business and Administrative Sciences or the College of Education on the basis of scholarship, need, and the recommendation of the dean of the college involved.

The Ives Memorial Scholarships. These scholarships were established in memory of Mrs. Julia Louise Ives and Mrs. Helen Andre Ives. The income from a $15,000 fund provides three scholarships for women students. Candidates must be residents of New Mexico, preferably living in Albuquerque, in good health, of good moral character, of high scholastic standing, and they must intend to teach. The scholarships are awarded by the President of the University in July of each year.

Kappa Kappa Iota—Anna Gay Scholarship. An annual scholarship of $75 to be given to a worthy senior from the College of Education, upon recommendation of the Dean of the College.

The Kathleen McCann Memorial Scholarship of Pi Lambda Theta. Alpha Mu Chapter of Pi Lambda Theta, women's honorary society in education, has established a scholarship of $100 as a memorial to the late Professor Kathleen McCann. The scholarship is awarded to a woman student above freshman rank who is preparing to teach.

The John Milne Memorial Scholarship Fund. A trust fund of $5,000 established as a memorial to the late John Milne, Superintendent of Albuquerque Public Schools for 45 years, provides scholarships for students who plan to be teachers.

The Bess Popejoy Scholarship. A resident tuition scholarship granted by the University of New Mexico in recognition of the life-long interest of Mrs. Tom Popejoy in the welfare of women students. The grant is made annually to a second semester junior woman majoring in elementary education.

The Millicent A. Rogers Memorial Museum Inc. Scholarship in Education. This scholarship of $500 is awarded annually to a resident above the rank of frehman in the College of Education, on the basis of need and scholastic achievement. The Millicent A. Rogers Foundation has

been established by the sons and friends of the late Mrs. Millicent A. Rogers, who was for many years a resident of Taos and who was deeply and actively interested in the people and the culture of the region.

The Dr. C. R. Spain Memorial Scholarship. A scholarship based upon the income from a trust in memory of the late Dr. C. R. Spain in the field of education. Recipient may be upperclass or graduate student. Applications may be obtained from the Student Aids Office.

Engineering

The A. F. Cone Memorial Scholarship. This memorial scholarship of $100 is awarded annually to a junior or senior in the College of Engineering on recommendation of the Dean of that college. The scholarship has been established to promote interest in the application of statistical methods and quality control in the engineering field.

Associated General Contractors of New Mexico, Building Branch. Two $250 scholarships awarded to students pursuing the construction option in the Department of Civil Engineering. Must be a full-time student; academic qualifications, need and interest in the construction industry will be criteria for selection. Scholarship can be renewed if recipient's academic record is good and satisfactory progress is being made toward a degree in Civil Engineering. Recommended by the faculty of the Department of Civil Engineering.

The Carter Scholarships. Income from a trust fund established by Mr. and Mrs. Rufus H. Carter, Jr., provides scholarship awards for qualified students in the Colleges of Engineering and Nursing. Recipients are selected on the basis of financial need and scholarship.

The Harry and Mable F. Leonard Scholarship Fund. This is a scholarship established by the Leonards for an undergraduate student in engineering or geology. The recipient must be a resident of the State of New Mexico. The need for financial aid is the primary factor in selection and scholarship is the second.

The Phillip D. Miller Memorial Scholarship. Mrs. Kathleen P. Miller has established a scholarship in memory of her husband, Mr. Phillip D. Miller. The scholarship is given annually to an upperclass student interested in a career in engineering, with the opportunity of having the award renewed if his academic work is satisfactory. The award is for $350.

New Mexico Section of American Society of Mechanical Engineers. A scholarship in the amount of $150 awarded to a sophomore, junior, or senior mechanical engineering student. Selection to be made by UNM Mechanical Engineering Department.

The Rust Tractor Company Scholarship. The Rust Tractor Company has established a scholarship of $250 to go each year to a sophomore in Civil Engineering. The award is open to residents of New Mexico and can be renewed each year until graduation if the recipient's academic work is good and he continues to progress satisfactorily toward a degree in Civil Engineering.

The Southern Union Gas Company Scholarships. Three scholarships of $500 each are provided, one for a student in the School of Business and Administrative Sciences and two for students in the Department of Mechanical Engineering. Recipients must be male students, preferably juniors or seniors. They shall be of good character and proven ability and shall be in need of financial assistance.

The Standard Oil Company of Texas Scholarship in Chemical Engineering. A scholarship of $500 is awarded to a junior or senior in the Department of Chemical Engineering on recommendation of the faculty of that department on the basis of scholarship, extracurricular activities, and good citizenship. A matching grant of $500 is made to the Department of Chemical Engineering, available periodically on a rotational basis.

Universal Oil Products Scholarship. Chemical Engineering scholarship of $500 established by the Universal Oil Products Company of Des Plaines, Illinois, is awarded to a junior or senior in the Department of Chemical Enigneering on recommendation of the faculty of that department on the basis of scholarship, extra curricular activities and good citizenship. A matching grant of $500 is made to the Department of Chemical Engineering.

The Western Electric Fund Scholarship. Through this fund, Western Electric provides an annual scholarship to a student in the College of Engineering. The award is for tuition, fees, and books.

Fine Arts

The Alpha Delta Pi Alumnae Scholarship in Art. The Albuquerque Alumnae Club of Alpha Delta Pi sorority has established a scholarship to be awarded to a sophomore woman in the Department of Art, who has attended the University at least one year and who is recommended by the faculty of the Department of Art on the basis of need and creative ability. The scholarship is paid to the recipient at the beginning of her junior year.

Art Fund Scholarships. The Art Department receives a limited amount of funds each year from projects it sponsors. This income is used for scholarships for students in the Art Department.

The New Mexico Art League Scholarship. A scholarship of $100 provided to promote art education is awarded on the basis of scholarship, need and ability to a junior or senior student on recommendation of the faculty of the Art Department.

Helene Wurlitzer Foundation of New Mexico Fine Arts Scholarship. The foundation offers a resident tuition scholarship to a student in the College of Fine Arts at the University of New Mexico. Selection of the recipient will be made by the Governing Board of the Foundation in connection with the College of Fine Arts.

Geology

The Albuquerque Gem and Mineral Club Scholarship. An annual scholarship of $200 to be awarded to a deserving geology major with special interest in mineralogy.

The Aztec Oil and Gas Company Scholarship. Aztec Oil and Gas Company annually awards $400 to a geology major on the basis of need, scholarship, and interest in following a career in petroleum exploration. The recipient preferably will be a New Mexico resident at the junior or senior level. Selection is made by the Department of Geology.

C. L. Herrick Memorial Fellowship in Geology. A fellowship granted in geology to a graduate student. Applicants should inquire at the Department of Geology.

The Harry and Mable F. Leonard Scholarship Fund. This is a scholarship established by the Leonards for an undergraduate student in engineering or geology. The recipient must be a resident of the State of New Mexico. The need for financial aid is the primary factor in selection and scholarship is the second.

History

The Alfred and Miriam N. Grunsfeld Scholarships. The income from a $10,000 trust fund provides two scholarships for men and two for women. The conditions governing the Grunsfeld Scholarships are as follows: (1) recipients must be legal residents of the State of New Mexico; (2) recipients must have been in full-time attendance at the University during their sophomore year; (3) recipients shall not have completed more than 66 semester hours by the end of the semester in which they are awarded the scholarships; (4) at least three of the four scholarships shall be awarded to students who declare at the time of application their intention to major in the Department of History or the Department of Political Science (a subsequent change in the major from either of these two departments to another department may terminate the award); (5) in selecting the recipients, consideration shall be given to their general scholarship and to their financial need.

The John F. Kennedy Memorial Scholarship. Income from a trust fund is awarded to a student or students engaged in original and scholarly research in the humanities or social sciences, preferably in the history of New Mexico and the Southwestern United States. Recipients shall be designated by the Scholarships, Prizes, and Loans Committee upon recommendation by the chairmen of the humanities and social science departments. Neither race nor creed is a factor in the selection of recipients. Two distinguished citizens of New Mexico, Calvin P. Horn and Senator Clinton P. Anderson, were instrumental in the establishment of this fund which is financed by private contributions and by the income derived from the sale of a book written by Mr. Horn entitled **New Mexico's Troubled Years.**

Home Economics

Albuquerque Food Service Association Scholarship. A scholarship in honor of Dr. Charles R. Spain, former Superintendent of Albuquerque Public Schools, is given a graduate of an Albuquerque public high school. Financial need and potential for completing degree with a major in Home Economics are necessary. Applicant must have completed 13 hours in Home Economics and have enrolled in 13 additional hours.

The Albuquerque Home Economists Scholarship. An annual scholarship of $100 awarded to a sophomore majoring in home economics. The scholarship will be awarded on the basis of financial need, scholarship and interest in following a career in home economics. The award will be announced in May of the academic year.

The Home Builders Auxiliary of New Mexico. One $100 scholarship awarded to a student in the Home Economics Department. Nominee should meet the following requirements: resident of the State of New Mexico, member of the senior class. Nominee must submit a letter of application to the Chairman of the Education Committee of the Home Builders Auxiliary, show financial need. Letters of application should include resume of grades, activities, and other interests. Selection is made by the members of the Boards of Directors of the Home Builders Auxiliary.

The Kappa Omicron Phi Scholarship. Pi Chapter of this national professional honorary in home economics provides a $100 scholarship for a senior who is a major in home economics. It is awarded on the basis of scholarship and financial need.

New Mexico Extension Homemakers Council. Two scholarships of $150 awarded annually to upperclassmen majoring in Home Economics. Recipients must be residents of New Mexico and shall have been members of a 4-H Club, in the upper third of their class during the previous school year and must be in need of financial assistance. Applications may be obtained from the Student Aids Office. The deadline is April 1 of each year with selection to be announced by June 1 of the same year.

The University of New Mexico Home Economics Club. A scholarship of $100 awarded each semester to a second semester freshman or above who is a full-time student having a grade point of 2.5 or better. The recipient must be a member of the Club and a Home Economics major.

Journalism

Albuquerque Press Club Scholarships. Grants of $225 to juniors or seniors who are Bernalillo or Sandoval County residents.

The Toppino-Golden Scholarship in Journalism. A scholarship of $100 which was established to encourage students to pursue a career in journalism is awarded in the fall of each year by the Journalism Department.

Medicine

Bernalillo County Chapter of National Infantile Paralysis Foundation Scholarship. Two annual scholarships are provided for students in the School of Medicine or related field. Recipients must be New Mexico residents and are selected upon recommendation from the Dean of the School of Medicine or department chairman.

The Bernalillo County Medical Association Scholarship. A scholarship in the amount of $300 given to a first-year medical student who must be a resident of Bernalillo County.

The Clarence Milton Botts, Jr., Memorial Scholarship. The income from a trust fund of $5,000, given by the late Dr. W. R. Lovelace as a memorial to Lieutenant Colonel C. M. Botts, Jr., who was killed in action near Manila, Philippine Islands, May 15, 1945, is awarded each year to a premedical student of junior or senior rank who is outstanding in scholarship and who gives promise of being a good medical student.

The Dr. Eric P. Hausner Memorial Scholarship. The income from a trust fund established by the Santa Fe Chapter of the Heart Association is awarded annually to a junior or senior student who has been accepted for admission to an approved medical college.

Charles May Memorial Scholarship Fund. A memorial scholarship fund established by Mr. May's wife. The interest from a $5000 trust fund is awarded each year to a premedical student with outstanding scholarship and the promise of being a good medical student.

The Thomas M. Wilkerson Memorial Scholarship. The income from a trust fund of $5,000 established by the late Dr. W. R. Lovelace in honor of Major Thomas M. Wilkerson, who was killed January 29, 1946, while in the service of his country, is awarded each year to a junior or senior premedical student who is outstanding in scholarship and who gives promise of being a good medical student.

The Women's Club of Albuquerque Scholarship. The Women's Club of Albuquerque has established an annual $100 scholarship for a first-year woman student in the University's School of Medicine. Selection, made upon the recommendation of the Dean of the School of Medicine, is based on scholastic ability and financial need.

Music

The Albuquerque Classical Guitar and Vihuela Foundation, Inc. Scholarships are awarded each semester, as funds are available, to a deserving student or students on the basis of need, academic achievement, and talent. Recipients must be sophomore, junior, or senior guitar majors. Interested students may inquire at the Music Department Office.

The Carl Cramer Memorial Band Scholarship. Friends of the late Carl Cramer have established this scholarship to be awarded to a member of the University band. Primary selection criteria are scholastic and musical ability and financial need.

Mu Phi Epsilon Scholarship, Albuquerque Alumnae Chapter. A scholarship of $75 awarded each spring, to be applied toward tuition for the following fall semester by this national professional music sorority. The recipient, who must be a music major, is selected by a committee from the Music Department and Mu Phi Epsilon.

The Presser Foundation Scholarship in Music. A scholarship of $400 is awarded by The Presser Foundation of Philadelphia to a student in music upon recommendation of the President of the University and the Chairman of the Music Department.

Sigma Alpha Iota Grant. The Albuquerque Alumnae chapter of Sigma Alpha Iota, International Professional Fraternity for Women in Music, will make available one or two grants to a music major(s). Recipient(s) will be selected on the basis of musicianship, scholarship and need by faculty members of the Music Department, or Chairman, and the Scholarship Committee of the Alumnae chapter. Recipient need not be a member of Sigma Alpha Iota.

The Sigma Alpha Iota Patroness Scholarship. The Albuquerque Patroness chapter of Sigma Alpha Iota will make available one or more scholarships to qualifying applicants in the field of Music. There will be a Patroness Scholarship Committee appointed yearly to organize and review qualifications with the University of New Mexico Scholarships, Prizes, and Loans Committee. Application is restricted to members of Alpha Sigma Chapter of S.A.I. National Honorary Music Fraternity, and they must apply direct to the sponsors of the scholarship.

The Albert Gallatin Simms Music Scholarship Fund. A trust fund established by music lovers who have enjoyed the June Music Festivals for many years has been established as a means of expressing their gratitude to Mr. Simms. The income from the fund will provide one or more scholarships for students majoring in music and studying stringed instruments.

The Berta Hurt Van Stone Memorial Scholarship. Mr. and Mrs. Walter M. Mayer of Santa Fe, New Mexico, have established a scholarship of $100 to be given annually in memory of Mrs. Berta Hurt Van Stone, Mrs. Mayer's mother, to a student majoring in the field of music.

Nursing

Army Nurse Corps Candidate Program. An effort by the Army to train nurses for the Army Nurse Corps. The Army pays the tuition, fees, room, board, books, and supplies. Application is made through the Army Recruiting Station.

Bernalillo County Medical Association Women's Auxiliary Scholarship. A $300 scholarship based on financial need is given to a student in the College of Nursing. Preference is given to a Bernalillo County resident. Scholarship is awarded to the University on alternate years.

The Carter Scholarships. Income from a trust fund established by Mr. and Mrs. Rufus H. Carter, Jr., provides scholarship awards for qualified students in the Colleges of Engineering and Nursing. Recipients are selected on the basis of financial need and scholarship.

The Gerald Champion Memorial Hospital Auxiliary Nursing Scholarship. An annual award of $100 is made to a student from Otero County who is following the program in Nursing. Recipient is selected by the Auxiliary.

The Portia Irick Nursing Scholarship. A fund established under the joint sponsorship of the Altrusa Clubs and Business and Professional Women's Clubs throughout New Mexico in honor of Portia Irick, who was an outstanding public health nurse in New Mexico.

Navy Nurse Corps Candidate Program. An effort by the Navy to train nurses for the Navy Nurse Corps. The Navy pays the tuition and fees, room and board, and books and supplies. Application is made through the Navy Recruiting Station.

The Jean Norris Scholarship in Nursing of the Progress Women's Club of Albuquerque. This scholarship provides $300 for a student in the College of Nursing upon recommendation of the Dean of that College. It was established to honor Jean Norris who was a nurse and a past president of the club.

Millicent A. Rogers Memorial Museum Inc. Scholarship in Nursing. An award of $500 is made to a tudent in the College of Nursing.

Pharmacy

The American Foundation for Pharmaceutical Education Scholarships. These scholarships are awarded to third-, fourth- or fifth-year students in the College of Pharmacy who rank in the upper quarter of their classes scholastically and who can demonstrate need. The scholarships vary in value and are made possible by an annual grant from the American Foundation for Pharmaceutical Education.

The John W. Dargavel Foundation Scholarship. The John W. Dargavel Foundation, sponsored by the National Association of Retail Druggists, annually provides a $200 scholarship for a third-, fourth-, or fifth-year student in the College of Pharmacy. The award is made by the College of Pharmacy.

The Davis Brothers Scholarship. A resident tuition scholarship provided by the Albuquerque Division of Davis Brothers, Inc., is awarded annually to a student in the College of Pharmacy on the basis of scholarship, ability, and need.

Health Professions Scholarship Program. A series of grants from the United States Public Health Service has enabled the College of Pharmacy to award scholarships in varying amounts to third-, fourth-, and fifth-year students in the College of Pharmacy.

McKesson and Robbins, Inc., Pharmaceutical Scholarship. A scholarship of $300 established by the El Paso and Amarillo Divisions of McKesson and Robbins, Inc., to be awarded annually to a student in the College of Pharmacy.

The New Mexico Allied Drug Travelers Association Scholarship. A scholarship of $300 is awarded annually to a junior or senior student in the College of Pharmacy who has creditable scholarship and who has need of financial assistance.

Pharmacy Alumni Association Scholarship. The Pharmacy Alumni Association of New Mexico annually awards a resident tuition scholarship to a pharmacy student of junior or senior rank. The recipient is selected by a committee composed of Pharmacy Alumni Association members.

The Women's Pharmaceutical Auxiliary Scholarship. A scholarship established by the Women's Pharmaceutical Auxiliary in New Mexico to cover the cost of tuition for one semester is awarded annually to a student in the College of Pharmacy upon the recommendation of the Dean and the approval of a committee of the Auxiliary.

Political Science

The Alfred and Miriam N. Grunsfeld Scholarships. The income from a $10,000 trust fund provides two scholarships for men and two for women. The conditions governing the Grunsfeld Scholarships are as follows: (1) recipients must be legal residents of the State of New Mexico; (2) recipients must have been in full-time attendance at the University during their sophomore year; (3) recipients shall not have completed more than 66 semester hours by the end of the semester in which they are awarded the scholarships; (4) at least three of the four scholarships shall be awarded to students who declare at the time of application their intention to major in the Department of History or the Department of Political Science (a subsequent change in the major from either of these two departments to another department may terminate the award); (5) in selecting the recipients, consideration shall be given to their general scholarship and to their financial need.

Psychology

The Benjamin Franklin Haught Revolving Scholarship. A scholarship trust provided for by the will of Hallie Swan Haught. The proceeds of this trust will be used for graduate scholarships in the University of New Mexico Psychology Department. Selection of recipient will be made by chairman of the department.

Sociology

Christopher A. W. McGee Memorial Award. The income from a $5,000 trust fund provides an award each year to a student majoring in Sociology who writes the best original paper on a sociological topic. Papers are to be submitted in accordance with rules published by the Department of Sociology each year, and are to be judged by a committee of faculty members in the Department. To be eligible for this award the student must be an upperclassman who, by the beginning of the spring semester in which papers are submitted, has at least 30 hours of course work to complete for graduation. The award will be made before the following fall semester.

Speech

The Don Kirby Forensic Scholarship. A scholarship of $100 established by Mr. Kirby because of his belief that participation in forensic activities is of extreme importance to college students. Selection of the recipient is based on forensic excellence, good scholarship, and need. The award is made by the University Scholarships, Prizes, and Loans Committee upon the recommendation of the Department of Speech.

UPPERCLASS AWARDS AND PRIZES

The Student Branch of the American Pharmaceutical Association Sophomore Award in Pharmacy. The University of New Mexico Branch of the American Pharmaceutical Association annually awards an appropriate book and certificate to the sophomore student in the College of Pharmacy who ranks highest in scholarship in his class.

American Society for Testing Materials Membership Awards. Two student memberships in the American Society for Testing Materials are awarded to two outstanding senior students in architecture.

Evelyn Duffett Ancona Prize (Music). A $25 prize is awarded each April to an active member of Alpha Sigma Chapter of Sigma Alpha Iota who has made a valuable contribution to the group through her active interest and participation.

The Eva Boegen Newman Center Prize. An annual prize of $50 is awarded to the student who renders outstanding service to the Newman Center.

The George E. Breece Prize in Engineering. A cash prize consisting of the income from a $600 trust fund is awarded to a graduating senior in engineering, who is enrolled for a full time course of instruction, upon the basis of character, general ability, and excellence of scholastic record as shown during the last two consecutive years of residence in the University.

The Chemical Rubber Company Handbook Award in Physics. A current copy of the **Handbook of Chemistry and Physics** will be awarded annually to the student in Physics 160, 161, or 262 selected as most capable by the Chairman and staff of the Physics Department.

The Charles Florus Coan Prize. The income from a trust fund donated by faculty and friends as a memorial to Charles Florus Coan, Ph.D., Professor of History and Political Science, is awarded annually, for excellence in scholarship, to a worthy student whose major field of study is history.

The Marian Coons Prize. A memorial prize consisting of the interest from a $750 trust fund is given each year to the regularly enrolled senior in the Department of Home Economics who is voted the most kind by her classmates and teachers in that department.

The Harry L. Dougherty Memorial Prize in Engineering. A cash prize consisting of the income from a trust fund contributed by colleagues, students, and friends, as a memorial to Mr. Harry L. Dougherty, Assistant Professor of Civil Engineering, is awarded each year to the student in the College of Engineering who has made the highest scholastic average in residence during his freshman and sophomore years while carrying a normal course of study.

Faculty Award in Pharmacy. The Faculty of the College of Pharmacy annually makes an appropriate award to the graduating senior in the College of Pharmacy who has attained the highest grade average for the entire course in pharmacy.

Faculty Womens Club Award. $100 is awarded each February to a junior or senior woman who has been outstanding on the UNM campus.

Dr. Reginald Fisher Award. A memorial prize given to an outstanding student in Inter-American Affairs. Preference is given to a student from Mexico or one studying some phase of Mexico.

The Charles LeRoy Gibson Memorial Prize. The interest from a trust fund created by students and colleagues of Charles LeRoy Gibson, Ph.D., Associate Professor of Chemistry, is given to the senior student, major or minor in chemistry, who is judged most outstanding by the faculty of that department.

Robert P. Goodkin Prize. An annual prize of $25 to be awarded to an Indian student majoring in Sociology. The award was established by Mr. and Mrs. R. P. Goodkin to recognize outstanding achievement in this area.

The H. J. Hagerman Prize. An annual $50 cash prize was established by the New Mexico Taxpayers Association in 1938. This is awarded to the regularly enrolled undergraduate student who presents the best original study in the field of taxation and public finance in New Mexico. The study should be submitted by December 1 to the faculty of the Department of Economics.

The Hamilton Watch Award. Each year the Hamilton Watch Company presents a watch to an outstanding senior in the College of Engineering. The recipient is selected by the College of Engineering Scholarship Committee.

R. E. "Jake" Haverstock Award in Art. An award of $150 will be made each year to a student in the Art Department who has demonstrated some form of unusual ability or progress in any field of that Department.

The Telfair Hendon, Jr., Memorial Prize. The interest from a trust fund of $500 established by John F. Hendon in memory of his brother, Mr. Telfair Hendon, Jr., Instructor in English, is given to the graduating senior who has achieved the highest scholastic record as a major in the Department of English.

The H. E. Henry Award in Pharmacy. A pocket watch appropriately engraved is presented annually to a male student in the graduating class of the College of Pharmacy on the basis of scholarship, ability, and promise in the field of pharmacy.

Kappa Alpha Theta Poetry Awards. To stimulate interest in creative writing, Kappa Alpha Theta annually presents awards in amounts of $15 and $10 for the two outstanding poems presented to the English Department.

The Kappa Kappa Gamma Alumnae Memorial Prize for Poetry. An annual prize of $25 to be awarded as a first prize for poetry in the undergraduate literary contests in the English Department. This prize was established in memory of all deceased members of the Association and of the New Mexico Chapter of Kappa Kappa Gamma.

The Barbara Kiker Memorial Prize. Friends of the late Mrs. Barbara Kiker have established a trust fund at the University to support a memorial prize in Dance. Recipients shall be either male or female students who are regularly enrolled at the University and who have made contributions toward the excellence of the Dance Program of the University. Recipients shall be selected by the Faculty Committee on Scholarships, Prizes, and Loans based upon recommendations received from the Chairman of the Department of Music. The $50 prize shall be awarded annually near the end of the Spring Semester.

Langell Art Supply Stores Award. The recipient of this $25 award is selected by the faculty of the Art Department for the best creative work of art, in painting, submitted in the annual student art show.

Law Prizes, see **School of Law Bulletin.**

The Mike S. Millican Memorial Prize. The interest from a trust fund established by colleagues of Mike S. Millican, members of the Chemistry Department, and friends of the University, is given to a senior student with a B.S. major in chemistry who is judged outstanding by the faculty of the department.

The New Mexico Section of the American Society of Civil Engineers Award. A certificate of merit with entrance dues paid for junior membership in the A. S. C. E., together with a membership badge, is given to a graduating student in civil engineering who excels in scholarship, holds membership in the student section of the engineering society, is active in student engineering organizations, and who, in the opinion of his professors, shows promise of becoming a successful engineer.

New Mexico Section of the American Vacuum Society. In order to stimulate and encourage interest in vacuum science and technology, the New Mexico Section of the American Vacuum Society has established a $100 award for a qualified graduate or undergraduate student submitting a brief essay. Included in the award will be a one-year student membership in the American Vacuum Society and the New Mexico Section.

The New Mexico Society of Professional Engineers' Wives Award. The Women's Auxiliary of the New Mexico Society of Professional Engineers awards each spring to a graduating senior in the College of Engineering a cash prize equivalent to the registration fee for the New Mexico Engineer-in-Training Examination. The prize is awarded on the basis of need, scholarship, and interest in Professional Engineering Registration.

The Phi Kappa Phi Senior Prize. Fifty dollars is given each year by the local chapter of Phi Kappa Phi to the graduating senior of any of the colleges of the University who makes the highest scholastic record of his class.

Phi Sigma Kappa Prize in Creative Play Writing. Phi Sigma Kappa has established an award of $30 annually for the best one-act play submitted in the creative writing contest.

Carl Redin Memorial Prize for Drawing. An award of $25 to be made for the best creative work of art submitted in the annual student art show.

Reynolds Metals Company Competition. An annual award of $250 to the student submitting the best original design for a building component in aluminum.

The Rose Rudin Roosa Prize. The income from a $1,000 trust fund is awarded each year to the upperclassman or graduate student in the Department of Political Science who has indicated in the opinion of his professors, the most positive interest in the development of good citizenship. A paper is required.

The George St. Clair Memorial Prize. The interest from a trust fund established by colleagues, students and friends of George St. Clair, Professor of English, Department Head and Dean of the College of Fine Arts, is granted to the student who has made the greatest contribution in acting, stage design, lighting, or production in the Department of Theatre Arts.

The Katherine Mather Simms Memorial Prize. A $50 prize as a memorial award is made each year to a regularly enrolled undergraduate, who has been in residence at least one semester preceding the time of the contest, on the basis of excellence in prose composition and on the quality of a competitive essay.

The Smead Manufacturing Company Prize. For outstanding achievement in business education a student is annually awarded a prize consisting of membership in the United Business Education Association, a subscription to the **U.B.E.A. Forum**, and a binder embossed with the student's name.

The Student Nurse Association Award. The Student Nurse Association gives a cash award each year to the nursing student who is chosen the Student Nurse of the Year.

The Lenna M. Todd Memorial Prize. The interest from a trust fund of approximately $2,000 is awarded annually to the student or students doing the best work in creative writing in the Department of English. This endowment was created by the will of Dana Paul Todd, as a memorial to his mother, Mrs. Lenna M. Todd. Dana Todd, Class of '33, served in the United States Army in the Philippines and died in a Japanese prison camp at Osaka, on or about August 15, 1943.

The Wall Street Journal Award. A prize consisting of a one year's subscription to the **Wall Street Journal** and a suitably engraved medallion are given annually to the graduating senior in the Finance Concentration of the School of Business and Administrative Sciences who has the highest scholastic average.

The Eric H. Wang Memorial Fund. Because of Mr. Wang's interest in the improvement of the engineering profession, the interest from a trust fund established in his name is used to help senior engineering students either to pay for special refresher courses taken prior to the Engineer-in-Training examination or to pay the EIT examination fee.

The Irene R. Wang Memorial Prize. Two annual prizes ($50 plus accrued interest) established by Mrs. Eric H. Wang in memory of her daughter, to two freshmen enrolled in the General Honors Program who have excelled in written work.

The College of Pharmacy Student Wives Club. Cash prize awarded annually to the most deserving student in Pharmacy.

Eli Lilly Achievement Award. Presented to a pharmacy student upon graduation in recognition of scholastic and professional achievement, leadership ability, and ethical conduct.

MEDALS AND CERTIFICATES

American Pharmaceutical Association Recognition Certificate. Presented to a member of the graduating class who is a member of the student chapter in recognition of outstanding service to the organization, college, and to the community.

The Beta Alpha Scholarship Key in Accounting. A certificate of achievement and a gold key are awarded annually by Beta Alpha, honorary accounting fraternity, to the graduating senior in the School of Business and Administrative Sciences with the highest grade in all his accounting courses.

Delta Sigma Pi Scholarship Key. This key is awarded annually by Delta Sigma Pi, national professional fraternity in business administration, to that male senior who upon graduation ranks highest in scholarship for the entire course in commerce and business administration.

The C. T. French Medal. The medal is awarded to a graduating senior of the College of Arts and Sciences who has obtained, during his last two years of continuous residence, the highest general average for scholarship in a program of not less than 14 credit hours a semester.

The Kappa Psi Award in Pharmacy. A certificate is awarded annually to the male student who has the highest scholastic average in the senior class of the College of Pharmacy. If the student is a member of Kappa Psi, a key is awarded in addition to the certificate.

The Kappa Psi Junior Award in Pharmacy. Gamma Rho Chapter of Kappa Psi pharmaceutical fraternity annually awards an appropriate book and certificate to the junior student in the College of Pharmacy who ranks highest in scholarship in his class.

The Kappa Psi Scholarship Honors Certificate. The Grand Council of Kappa Psi pharmaceutical fraternity awards annually a certificate to each member of Kappa Psi who completes the full junior and/or senior year (last 2 years of the professional curriculum) with a minimum grade-point average of 3.0 for each year. A member may qualify for a certificate for each of the 2 years.

The New Mexico Pharmaceutical Association Award in Pharmacology and Other Biological Sciences. The New Mexico Pharmaceutical Association annually awards an appropriate book, or books, and certificate to the graduating senior in the College of Pharmacy who ranks highest in scholarship in the required courses in Pharmacology and other biological sciences.

The College of Pharmacy Alumni Association Award in Pharmaceutical Chemistry and Chemistry. The Alumni Association of the College of Pharmacy annually awards an appropriate book, or books, and certificate to the graduating senior in the College of Pharmacy who ranks highest in scholarship in the required courses in pharmaceutical chemistry and chemistry.

The Phi Gamma Nu Scholarship Key. This key is awarded annually to the senior woman student, not necessarily a member of the fraternity, who upon completion of seven semesters of college work ranks highest for the entire course in Business and Administrative Sciences or Business Education. The award is made by the Dean of the School of Business and Administrative Sciences and the Dean of the College of Education.

The Phi Sigma Certificates in Biology. Each year the National Society of Phi Sigma awards a certificate to a regularly enrolled undergraduate student and another certificate to a graduate student in the University of New Mexico for excellence in biology and promise of future achievement.

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. 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.

Information in regard to Admission and Registration, Orientation and Advisement, Student Housing, and Financial Aid will be found in those respective sections of this catalog.

DEAN OF STUDENTS

The Dean of Students is responsible for coordinating important aspects of student life outside the classroom. The office is a source of advice, counsel, and information concerning any matter about which students have questions. The personnel deans also work with student groups and specifically advise student honorary and service organizations and the Greek system on campus.

Students living in University residence halls are under the supervision of the Dean of Students and, in this connection, a program of teaching/training for resident advisers is provided. In addition, the Dean of Students is responsible for the Student Activities Office (located in the New Mexico Union) which works closely with the student governments, supervises the chartering and re-chartering of student organizations, and provides leadership in developing student activities programs.

COUNSELING CENTER

The Counseling Center is located on the second floor of the south wing of Mesa Vista Hall.

The services of the Counseling Center are open to all students of the University and its staff, without charge. Persons interested in counseling with regard to educational and vocational decisions may be assisted through the use of standardized tests in areas of aptitude, personal adjustment, study habits, and vocational interests. Persons asking for assistance with personal and social matters will be interviewed by a counseling psychologist, and all test results and personal information are held confidential.

Vocational materials and assistance in their utilization are also available through the Placement and Counseling centers. Students and other interested persons are invited to use the various vocational resource materials on weekdays from 8:00 a.m. to 5:00 p.m.

Additional functions of the Counseling Center include veterans' guidance and the provision of special services through contract with the Veterans Administration. Enrollment Certification for the purpose of obtaining benefits under the G.I. bill is initiated by contacting the Counseling Center. It is necessary to repeat this step at the beginning of each term of your attendance at UNM.

OFFICE OF INTERNATIONAL PROGRAMS AND SERVICES

INTERNATIONAL PROGRAMS. The growth of international programs at the University of New Mexico reflects a phenomenal development characteristic of American universities. The Office maintains a listing of faculty capabilities for overseas programs, and coordinates new international projects which the University may undertake.

INTERNATIONAL STUDENT PROGRAM. The University of New Mexico is committed to the support and encouragement of an international student program. The Director of the International Office acts in a liaison capacity with faculty and administrative departments of the University on behalf of the foreign students. His staff also endeavors to assist the student from abroad by counseling with him and by encouraging him to use the services offered by the University in areas such as academic advising, student health insurance (foreign students are required to have this coverage for themselves and dependents), counseling and testing, housing and employment.

In addition to making proper referrals, the International Office provides orientation programs, community hospitality, and immigration assistance to the student from abroad. The Director attempts, moreover, to give a maximum of personal attention to the unique problems of the foreign students.

FULBRIGHT PROGRAM. The Director of International Programs and Services acts as Fulbright Program Adviser. His duties in this capacity include publicizing the Fulbright competition, announcing grants offered, providing application forms, counseling American students, and arranging faculty committees for interviews and evaluations.

AMERICAN STUDENTS ABROAD. Information may be obtained on institutions of higher education throughout the world, admission practices, equivalence of credentials, costs, and living accommodations. Also available are awards and special programs during the academic year, summer opportunities, organizations in the U.S. providing services to Americans going abroad, and government regulations affecting U.S. citizens overseas.

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 kinds of medical care that one would expect to receive from a private physician. There are six full time general physicians and six consultant specialists operating a clinic 8 a.m.-4 p.m. Monday through Friday and 8 a.m.-12 noon on Saturday. In addition, there is a 24-hour Emergency Service staffed by nurses and corpsmen, with a staff physician on call.

A complete clinical laboratory and Radiology Service is available at the Health Center. There is a 35 bed infirmary, physio-therapy, immunization clinic, and a Mental Health Team at the Center.

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

The Student Health Center is funded through a budgeted allocation from student fees and is available to all students carrying 8 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 observe the same ethical codes concerning confidentiality as your family physician does. Information regarding individual's health status leaves the Health Center only after written permission from the student is received.

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 and consultation 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 non-student spouse and/or dependents is available.

Any student enrolled during a regular semester for eight 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 re-admitted students as part of admissions procedure. In addition, a representative of the Company holds regular hours at the Health Center to answer questions and assist with claims.

THE CAREER SERVICES CENTER

The Career Services Center is a centralized activity which embodies every aspect of career and full-time job assistance. The Center 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 the Center.

The Career Services Center acts as a general clearing house 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 the Center are desired.

LOBOS
GERARD

The Center 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.

No fee is charged for services rendered by the Career Services 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.

The UNM Bookstore, located in the Union, has available all the books and materials required in University courses. Union food services include several snack bar areas, cafeteria, dining room, and catering facilities. 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.

STUDENT ACTIVITIES

The Student Activities Office, located in the New Mexico Union, is designed to serve as the center of a consolidated program enlisting the joint efforts of student governments, programming committees, student organizations, academic departments, and administration to bring about a balance of activities providing the greatest values and benefits for the University community. This office is administered by the Dean of Students.

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.

Intercollegiate athletics are governed by regulations of the Western Athletic Conference, the general athletic policy of the University, the North Central Association of Colleges and Secondary Schools, and the National Collegiate Athletic Association.

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

The University also sponsors an intramural program designed to supplement the prescribed courses in physical education. The intramural program includes

swimming, tennis, handball, golf, cross-country, track and field, volleyball, touch football, bowling, baseball, lacrosse, softball and basketball. A parallel program of sports appropriate for women is sponsored by the Women's Recreational Association.

The Athletic Offices and service facilities for student athletes is located on the south campus and are cordinated 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 15,000, is located on the south campus, just west of University Stadium, which seats 30,000. 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 OF 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: The Baha'i Student Association, the Baptist Student Union, Campus Crusade for Christ, the Canterbury Episcopal Chapel, Chi Alpha Fraternity, the Christian Science Organization, the Christian Student Center, the Jewish Student Union, the Lobo Christian Fellowship, the Lutheran Student Association, the Aquinas Newman Center, Orthodox Baha'i Club, Student Association of The Church of Jesus Christ of Latter Day Saints, and the United Ministries Center.

The Alumni Memorial Chapel, located conveniently in the center of the campus, is a non-sectarian religious sanctuary financed by contributions from alumni and friends of the University. It is available to any religious group, whether Protestant, Catholic, Jewish, Mohammedan, or other, 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 any current member of the University community and to alumni. The Chapel may be scheduled through the Office of the Vice President for Student Affairs, Scholes Hall 161, or telephone 277-4041.

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 function 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.

GRADUATE STUDENT ASSOCIATION

All graduate students are members of the Graduate Student Association, approved in 1969-70 by the faculty, administration, and Regents of the University. The purpose of the Association is to serve the special needs of graduate students by providing the opportunity of self government.

HONORARY AND SERVICE ORGANIZATIONS

The following organizations are active: Phi Beta Kappa, Phi Kappa Phi, Blue Key, Mortar Board, Alpha Phi Omega, Chakaa, Las Campañas, Spurs, Vigilante, and Circle K.

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

SOCIAL GROUPS

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

Sororities: Alpha Chi Omega, Alpha Delta Pi, Chi Omega, Delta Delta Delta, Delta Gamma, 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.

STUDENT PUBLICATIONS

The **New Mexico Lobo,** the campus newspaper, is published daily every regular week of the University year. Other publications include The Mirage, the campus yearbook, and The Thunderbird, a literary magazine containing literary contributions submitted by students.

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.

GENERAL ACADEMIC REGULATIONS

THE STUDENT is advised to familiarize himself with the academic regulations of the University. He is solely responsible for complying with all regulations of the University, of his respective college, and of the departments from which he takes courses, and for fulfilling all requirements for his particular degree.

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.

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, Average. 2 grade points per credit hour.
D, Barely Passed (not considered passing in Graduate School). 1 grade point per credit hour.
F, Failed. F is also given in any course which the student drops after the twelfth week of a semester or sixth week of a summer session while doing failing work.

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.

Certain workshops and courses may be offered under CR and NC, as defined above, only with the approval of the Committee on Entrance and Credits.

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.

The following limitations apply:

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. 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 credit-no credit grading (such as Guid 429, Workshop in Counseling);

however, the student cannot be penalized by a department if, in the process of selecting or changing major fields, he has taken a course in his major on a Credit Grade Option basis.

At registration a student desiring to take a course under the Credit Grade Option registers on that basis. The student may change from the Credit Grade Option to a regular credit basis, or from a regular credit basis to the Credit Grade Option until the end of the twelfth week of the semester. Either change after registration requires completion of a Program Change Request. A final grade of CR (Credit) indicates satisfactory completion of a course, but the hours are not computed in the scholarship index. A student may not enroll on the credit option basis when repeating a course in which he has previously been enrolled under the regular grading system.

OTHER GRADES

I, Incomplete. The grade of I is given only when circumstances beyond the student's control have prevented his completing the work of a course within the official dates of a session. 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 his 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. A grade of Incomplete which is not removed during the periods and by the procedure prescribed above remains on the record indefinitely.

W, Dropped Without Discredit. W is given in any course which the student drops officially after the twelfth week of the semester or sixth week of the summer session, subject to the regulations for dropping a course or for withdrawal from the University. These regulations appear under "Change in Program of Studies" and under "Withdrawal from the University" on pp. 157-158.

CR, Credit. At the graduate level CR is used to report satisfactory completion of a master's thesis or doctor's dissertation.

NC, No Credit. At the graduate level NC is used to report unsatisfactory completion of master's thesis or doctor's dissertation.

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.

CHANGE IN GRADE. No grade except I can be raised 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. (See I above.)

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 Committee on Entrance and Credits.

GRADE REPORTS

Copies of end-of-semester grades are mailed to parents of undergraduate students, with the exception of married students and students over 21 years of age.

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.

CHANGES IN ENROLLMENT

CHANGE IN PROGRAM OF STUDIES. The student who desires to add a course to, or drop a course from, his program of studies should obtain from his college office the Program Change Request form. The student obtains signatures when called for and returns the form to his college office. The college office sends the form to the Office of Admissions and Records where official entry is made on the student's record. 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).

A student has the right to withdraw from a course, or courses, during the first twelve weeks of the semester or the first six weeks of the summer session with a grade of W, except that a grade of F assigned by an instructor on the basis of University regulations relating to student dishonesty will be shown and counted on the official transcript. When a student exercises the right of withdrawal after the twelfth week of the semester or the sixth week of the summer session, he will receive a grade of W if he is passing the course or a grade of F if he is failing the course at the time of withdrawal, as determined by the instructor in the course. The effective date of withdrawal is the date the completed form is returned to the student's college or school office as entered on the Program Change Request by that office. For regulations governing withdrawal from all courses for which a student is enrolled, refer to "Withdrawal from the University" below. In the School of Law, a student desiring to drop a course after the first 8 weeks must petition the faculty of that School in writing to drop the course and receive a grade of W therein.

The student is responsible for the completion of every course for which he has registered; if he drops a course at any time without filing the official change of program form, he 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 SECTION. Transfer from one section to another section of the same course is effected by application to, and approval by, the department chairman involved. By use of the Section Change Authorization form, the department chairman notifies the Records Office of the approved change. No withdrawal grade is assigned in a section change. A fee of $5 is charged for any section change authorized after the end of the fourth week of the semester or after the end of the second week of the summer session.

CHANGE IN COLLEGE. A student who desires to change his registration from one college to another within this University shall petition the dean or director of the college in which he is currently enrolled. This petition requires approval of both colleges and is then filed in the Office of Admissions and Records.

CHANGE IN ADDRESS. Each student is expected to keep the University authorities informed as to his address. Any change in address should be reported immediately to the Office of Admissions and Records.

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 a student wishes to withdraw from all the courses in which he is enrolled during a semester, or summer session, he should secure a withdrawal card from the office of the Dean of Students. Any unmarried undergraduate student under 21 years of age should have a letter of permission from parents to withdraw from the University. When a student withdraws officially from the University during the first twelve weeks of the semester or the first six weeks of the summer session, grades of W are assigned, except that grades of F assigned on the basis of University regulations relating to student dishonesty will be shown. Grades of W or F as determined by the instructors in his courses are shown on the student's record if he withdraws officially from the University after the first twelve weeks of the semester or first six weeks of a summer session. When a student leaves the University during a semester and does not carry out his withdrawal according to this regulation, he becomes liable for a grade of F in all his classes, even though he is passing his courses up to the time of leaving.

MILITARY WITHDRAWAL. Under faculty regulations an undergraduate student who formally withdraws from the University to enter military service after completing twelve weeks of instruction will receive full credit for each course in which he is enrolled provided the instructor certifies a grade of C or better for the course at the date of formal withdrawal. He will receive a grade of W if the instructor certifies a grade of less than C. A final semester senior who has satisfactorily completed at least half of the work in courses for which he is enrolled that semester, provided these would complete his degree requirements, may be

certified for graduation by the faculty of his college. 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. Any course may be repeated. 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. A course repeated will not change the student's record of the past in any way nor count in the student's index unless it is completed with a higher grade than in the previous attempt or attempts. This regulation is not applicable in the School of Law.

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.

AUDITED COURSES

A student may register for a course as an auditor, without credit, provided he obtains the permission of the instructor concerned and of the dean or director of the college having jurisdiction over his program of studies. 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.

A student may change from audit to credit basis only during the first 2 weeks of the semester or the first week of the summer session. An undergraduate student may change from credit to audit basis within the first 12 weeks of the semester or the first 6 weeks of the summer session regardless of his grade at the time the change is made. After the twelfth week of the semester or the sixth week of the summer session, a student enrolled for undergraduate credit may, subject to approval by the Dean or Director of his college, change from credit to audit only if he is earning a grade of C or better. The student enrolled for graduate credit may change from credit to audit after the twelfth week of the semester or the sixth week of the summer session only if he is earning a grade of C or better.

CLASSIFICATION

A student admitted to one of the degree-granting colleges from the University College will be classified on entry into the degree-granting college as a sophomore. Classification beyond sophomore status will be determined by the college on the basis of the student's progress toward his chosen degree.

SCHOLASTIC REGULATIONS

DEAN'S LIST

At the end of each semester all the undergraduate colleges and the School of Law recognize excellence in scholarship by publishing the names of students who have achieved outstanding academic records. These Deans' Lists are made available to University and outside news media.

SCHOLASTIC STANDING

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 (or at the time of withdrawal). At such times, all students who are deficient in scholarship are placed on probation, or suspended, in accordance with the following regulations. A student placed on probation at any time will remain on probation until the next final examination period.

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. A student is placed on academic probation at the end of any semester or summer session in the University College if his scholarship index falls below the applicable minimum indicated above.

DEGREE-GRANTING COLLEGES AND NON-DEGREE STATUS. A student in a degree-granting college or in non-degree status is in good academic standing if his academic record shows 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. A student will be placed on academic probation at the end of any semester or summer session when his academic record fails to equal one of the two minimums set out above. (The student is reminded that the grade-point average required for graduation from some colleges may be, in certain individual cases, higher than the grade average necessary to avoid probation.)

SUSPENSION

UNIVERSITY COLLEGE. A student is subject to suspension at the end of any semester or summer session in which he was carried on academic probation as defined above, unless he has succeeded in removing himself from such probation by acquiring the minimum scholarship index. No student, however, is subject to suspension or dismissal because of his grade-point 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. A student in a degree-granting college or in non-degree status whose name has appeared on a probation list at the end of any semester or summer session is subject to suspension at the end of his next semester or summer session if he has not qualified for removal from probation status by that time.

A student who has been suspended is not eligible to re-apply for admission for a period of one calendar year from the date of suspension. The readmission of a suspended student to the University after the expiration of the suspension period is contingent upon the approval of the dean or director of the college to which he is seeking admission or readmission. A student who is suspended for

poor scholarship or who, after having been placed on probation, fails to re-register for the following semester, shall be considered as on probation upon his return to the University. The same regulation applies to a student who withdraws from the University while on probation (unless his withdrawal grades make him 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 he 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.

School of Business and Administrative Sciences: For additional regulations, see section "School of Business and Administrative Sciences."

College of Nursing: For additional regulations, see section "College of Nursing."

College of Pharmacy: For additional regulations, see section "College of Pharmacy."

SUSPENSION BY SCHOLARSHIP COMMITTEES OR DEANS. 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; and such committee may recommend to the dean probation or suspension from the University for such student.

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

GRADUATE SCHOOL DISQUALIFICATION

See the **Graduate School Bulletin.**

ATTENDANCE

Students are expected to attend all meetings of the classes in which they are enrolled. No extensions of the vacation periods are given to any students, regardless of the location of their homes. Non-attendance 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 dean or director of the college concerned. A student with excessive absences may be dropped from a course with the grade of F, by the dean or director of the college upon recommendation of the instructor. The dean or director may suspend a student from the University, on the grounds of neglected duty, when he has thus been dropped from two courses.

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 his instructors to make up work missed.

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. A grade of I may be given when there is a valid reason for absence from the examination.

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, generally will be cause for dismissal from the University.

Non-disclosure 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. 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 outstanding accounts with the University have been cleared.

SCHOLASTIC STATUS. An undergraduate student has the status: "in good standing," "on probation," or "under suspension." The University's period of academic suspension is one calendar year. At the expiration of the suspension period, the student may apply for readmission; but re-enrollment requires the approval of the college dean or director.

HONORABLE DISMISSAL. The status "in good standing," or "on probation," entitles the student to honorable dismissal, and on transcripts no separate statement of honorable dismissal is necessary. Whether he completes a semester, or withdraws with permission before the end of the semester, a student is entitled to honorable dismissal provided that he has the necessary scholastic status and is in good standing regarding conduct and financial obligations. Honorable dismissal implies that the University will permit the student to re-register in the next session.

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.

SPECIAL EXAMINATIONS. A special examination is one taken at a time other than regularly with the class. Classified as special examinations are: examinations given to make up missed regular course examinations; examinations to establish credit; examinations to validate unaccredited, or otherwise unacceptable, credit earned at other college-level institutions; and examinations to remove a grade of I.

A fee is charged for all special academic examinations administered by the faculty. All examinations to establish or validate credit are charged for on a per-credit-hour basis. (see p. 117).

Before the student is admitted to a special examination, he must present to the instructor a permit signed by the dean or director of his college. For those examinations where a fee is required, the permit must show the Comptroller's receipt of the fee.

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 credit in courses appearing in the University's general catalog and in which he has not been previously enrolled at the University of New Mexico. An interview with the department concerned is required. Upon recommendation of the department chairman and approval by the dean or director of his college, the student secures from his college office a permit for the examination, pays in advance the required fee of $2.50 per credit hour, and presents 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. Credits earned by examination may count toward graduation requirements but do not apply to residence requirements.

OTHER EXAMINATIONS. For information concerning the Advanced Placement Program and the College Level Examination Program of the College Entrance Examination Board see "Admissions and Registration."

DEGREE REQUIREMENTS

The student may graduate under the catalog requirements for the year in which he was enrolled for the first time in the degree-granting college of the University of New Mexico from which he is seeking a degree, provided he completes graduation requirements within a continuous six-year period. If a student interrupts his attendance, or transfers from one degree-granting college to another within the University, he must graduate under the catalog in effect at the time of his readmission or transfer.

For information concerning the various degrees offered, and for course and scholastic requirements leading to these degrees, students should refer to those sections of the catalog devoted to the colleges.

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 senior residence requirements. A transferring graduate should notify the Dean of Admissions 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.

SCHOLASTIC REQUIREMENT. The minimum University requirement for a bachelor's degree is at least a 2.0 cumulative grade-point average on the last 124

semester hours of degree work or such greater number as is required for the degree sought. The individual colleges, however, have the privilege of requiring for their respective degrees an average higher than this minimum. The average is computed entirely on the University of New Mexico work. The student is referred to the various college sections for individual college requirements.

PHYSICAL EDUCATION REQUIREMENT. By action of the Faculty, Physical Education is not a University requirement. See the college section of this catalog for the degree college in which you plan to earn your degree for specific Physical Education requirements.

For specific requirements leading to degrees in the various curricula, students should refer to the courses of study outlined in the listings of the different colleges.

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 senior 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. No dividends or penalties are given in the Colleges of Engineering, Fine Arts, Nursing, Pharmacy, the School of Business and Administrative Sciences, and the University College—BUS program.

SENIOR ON-CAMPUS RESIDENCE CREDIT REQUIREMENTS. A student who has earned less than 60 semester hours of residence credit previous to classification by his college as a senior (see "Classification") shall earn 30 semester hours of residence credit on the Albuquerque campus during the senior year.

A student who has earned 60 semester hours, but less than 90, of residence credit previous to senior status shall earn 24 semester hours of residence credit on the Albuquerque campus in the senior year.

A student who has earned 90 or more semester hours of residence credit previous to senior status shall earn 15 semester hours of residence credit on the Albuquerque campus in the senior year.

In no case is the number of hours specified to be earned in the senior year to be interpreted as necessarily the last hours.

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

A student may, with approval of his department chairman and of his college, fulfill senior residence requirements at an established University of New Mexico off-campus center provided the student has successfully completed at least 30 semester hours on the University's main campus in Albuquerque prior to enrollment for the senior year at the UNM center. For special regulations governing senior residence requirements in specific subject areas at Los Alamos Residence Center, see p. 291.

The student who has completed a baccalaureate degree and who is seeking a second undergraduate degree will be reclassified by the degree college in accordance with the hours and requirements completed toward the new degree.

Senior on-campus residence credit requirements for the second degree will be determined on the same basis as those for the first degree.

DEFINITION OF RESIDENCE CREDIT. Residence credit is defined as credit earned by attendance in regular classes on the University of New Mexico *main campus*, in any of its field sessions, or up to 60 semester hours of credit earned in any of the University's off-campus residence credit centers. Credits earned in extension or independent study (correspondence) courses, by examination, or credits transferred from other accredited collegiate institutions are not considered residence credit at the University of New Mexico.

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).

EXTENSION AND INDEPENDENT STUDY CREDIT HOURS ALLOWED TOWARD DEGREE

1. Credit is allowed for independent study and extension courses completed at this University or through other colleges and universities accredited by regional accrediting associations.
2. As many as 40 semester hours in independent study and extension courses will be allowed toward the bachelor's degree provided that at least 10 of the 40 have been earned in extension courses taught by regular resident instructors of the University. Of this 40-hour maximum, no more than 30 hours will be allowed in independent study work.
3. 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.
4. The hours earned by independent study or extension from accredited institutions other than the University of New Mexico may be counted towards degree requirements but the grades will not be included in the grade-point average of the student. (See "Scholarship Index," p. 157).
5. Courses taken from other institutions must correspond to those offered at the University of New Mexico.
6. Any graduating senior not in residence who expects to offer credits earned by independent study toward fulfillment of degree requirements must have prior approval of the dean of his college.

For regulations governing the addition of independent study or extension courses to the student's program while he is in residence, refer to p. 158.

7. No credit will be given for a course taken by independent study if the student has previously received a grade of F in the course at this University. Exceptions to this rule can be made only upon petition to, and approval by, the Committee on Entrance and Credits.
8. 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 Semester II. 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 a student 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 student becomes a candidate for Honors only; the level of Honors with which he is 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 student is a candidate for Honors and the level of Departmental Honors with which he graduates is determined by his department (or college, in colleges which are not departmentalized).

Graduation with Honors, either General or Departmental, is in no sense automatic. The student is 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 (leading to graduation with Honors in General Studies) is available to students in any undergraduate degree-granting college or division of the University, including candidates for the B.U.S. degree. Requirements for graduation with Honors in General Studies are as follows:

1. A 3.2 over-all grade-point average.
2. Completion of 9 hours in courses numbered above 300 and including 402 listed under "General Studies—General Honors Program" in the "Courses of Instruction" section of this catalog.
3. Completion of at least an additional six hours in courses listed under either "General Studies—General Honors Program" or "General Studies—Undergraduate Seminar Program" in the "Courses of Instruction" section of this catalog.

4. Completion at the University of New Mexico of all of the last 60 hours of the work for the bachelor's degree.

5. Certification by the General Honors Council.

In addition to these specific requirements, the General Honors Council may set such additional qualitative requirements as are approved by the University Faculty. Completion of the required courses does not necessarily mean that the student will graduate with General Honors.

The student normally becomes a candidate for graduation with Honors in General Studies at the beginning of his junior year, and should make application at that time. The sequence of specific Honors courses normally begins in the second semester of his junior year. The requirement of the additional six hours (see 3 above), which may include Gen St 101 or 102 (Freshman Reading Seminar) or any of the one-hour courses in the Undergraduate Seminar Program, can be met at any appropriate time in the student's four undergraduate years. His program may be crowded in the last two years if he has not taken either Gen St 101 or 102 (Freshman Reading Seminar) or some of the one-hour Undergraduate Seminar Program courses before becoming a candidate for graduation with Honors in General Studies. Nevertheless, it is possible for a student to complete the total requirement in the four semesters of his junior and senior years.

The major purposes of the program of General Honors are as follows: (1) to supply additional breadth to the student's general education; (2) to give students who are able to take advantage of it an opportunity to engage in a challenging and demanding intellectual program and to put them more directly in contact with other students similarly inclined; (3) to give these students full opportunity for self-expression orally, in writing, and by other means, in small discussion and participation groups.

To better fulfill these purposes and to take emphasis off grades as such, the faculty of the University has adopted the following system of grading in General Studies (General Honors) courses: A (Honors) is computed in the scholarship index like any other A; 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. If a student performs at Honors (A) level, he gets full credit in every way for his performance. At the same time, the student is not penalized if he attempts Honors work and does not perform at the highest level.

Performance and the level of achievement in the General Honors Program will not be judged by mechanical quantitative standards. The student will be under guidance in small groups by a variety of faculty members. The program, in short, is designed to offer the student an opportunity; and the student is expected to respond with liveliness, imagination, and complete conscientiousness.

The candidate for General Honors may be dropped from the program at any time when his performance shows that he is not responding fully to the opportunities being offered him.

Special advising is available to all students who are candidates for General Honors. Information about the advising of Honors students can be obtained in the office of the Director of General Honors.

Students in General Honors will be encouraged to undertake also Departmental Honors.

THE UNDERGRADUATE SEMINAR PROGRAM. Each semester, about twenty one-hour seminars on topics of general interest are offered. Classes are limited to fifteen students and are designed to permit fullest participation in class discussion. These seminars have no prerequisites, require no specific technical background, and are open to any undergraduate student in good standing in any college or any class, including the freshman class. The grading system is as follows: A (Honors or excellent), CR (Credit), NC (No Credit); CR and NC are not computed in the grade-point average. These are not Honors courses and enrollment is not restricted to Honors students, although these seminars may be used by candidates for graduation with Honors in General Studies to fulfill part of their course requirement.

Small classes, lively discussions, acceptance by students of a high level of responsibility for the success of the courses, outstanding teachers, timely and relevant topics, emphasis upon evaluation of ideas and concepts rather than upon achieving of skills or information—these are features of these courses intended to appeal to students with a desire to learn and to contribute to the improvement of the educational process.

THE DEPARTMENTAL HONORS PROGRAM. A Departmental Honors program is available to the qualified student in many departments of the University and will ultimately be available in nearly all departments. The student should inquire of the chairman of his 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 only if they meet the requirements for the major and for the Departmental Honors program in a certain department.

Normally, the student enters a Departmental Honors program in his junior year. He should at least make his intention of graduating with Departmental Honors known to his chairman or dean early in his junior year. Admission to Departmental Honors candidacy can in no case be granted later than the beginning of the student's senior year.

Minimal requirements for graduation with Departmental Honors are as follows: (a) an over-all 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.

The purposes of departmental honors programs are as follows: (1) to intensify and deepen the student's knowledge in his major field; (2) to put this specialized knowledge into better relationship with knowledge in related fields and in the

larger general area of the student's specialization; (3) to bring the student under closer guidance of, and into closer acquaintance with, teachers in his field.

Graduation with Departmental Honors shall 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 shall be graduated are both in the discretion of the department.

SCHOOL OF LAW GRADUATION HONORS

The J.D. degree may, in the discretion of the Law School faculty, be awarded with the honors indicated to graduating students who have achieved the following over-all grade-point averages in their law school work: 3.4, **cum laude;** 3.6, **magna cum laude;** 3.8, **summa cum laude.**

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 Entrance and Credits Committee.

Student Health Center, University College and Counseling Center

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, Associate of Arts in Human Services degree program, the College English Tutorial program, and the Associate of Science in Laboratory Technology degree program.

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 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.

If you HAVE decided to prepare for admission to a particular degree-granting college of the University, you should undertake the program of courses recommended by that college and which is described in the section of this catalog devoted to that college.

If you have NOT decided upon a particular field of study, you are encouraged to develop a program of first-year courses designed to help you discover areas in which you have interest and special competence. Please note that this exploratory approach may require more than four years of academic work to earn a degree if you later choose to enter a highly structured degree program, one having many specific requirements.

Several resources are available to assist you in formulating a program of studies. Comprehensive orientation sessions dealing with all aspects of academic life are held during the summer for beginning freshmen. Faculty members in the various departments are available during a semester on an individual basis, and special advisers are available to you throughout the year in the University College office.

When you have decided on an academic major and meet the admission requirements of your chosen degree-granting college, you are urged to transfer from the University College without delay. However, if you wish further to explore differing areas of interest, you may remain in the University College through the sophomore year, subject to the scholastic regulations of the College.

If you do not find a 4-year course leading to a degree advisable, the University College can provide a variety of 2-year programs leading either to a two-year degree, or 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 receive 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 unusual 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 responsibility 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 vocational choice, and the relationships between student aptitude, interests, and academic scholarship. In recent years there has been an intensification of this research function particularly in the areas of non-intellective factors.

ADMISSION REQUIREMENTS

For admission requirements to the University College, see the "Admission" section of this bulletin. 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.

You may not enroll in the University College after you have been admitted to any degree-granting college of the University of New Mexico.

CONTINUATION IN UNIVERSITY COLLEGE

You will not be permitted to re-enroll 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 for which you have received any grade. Included in this calculation are all Incompletes, repetitions, and accepted military credits. The only grade that is excepted from this calculation is "Withdrawal Passing" (W or WP).

Nor will you be eligible to re-enroll in the University College if at the end of your previous semester or 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, and including accepted military credits.

SCHOLASTIC REGULATIONS

See p. 159.

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 2 semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous 2 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. (For definition of scholarship index see p. 157).

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 can be made only at the end of a semester or summer session. To effectuate a transfer come to the University College office no later than the end of the twelfth week of a semester and file a petition. 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 the 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 semesters 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.

If you are seeking the University College Certificate, you may pursue courses in the Department of Naval Science only with the permission of the Dean of the University College and the Professor of Naval Science.

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 program of studies designed to meet his particular needs. If you select this degree program you will find that it permits both inter-college and inter-departmental 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 combina-

tion of courses reflect either specialized or broad patterns of educational experience, depending upon your preference.

Strict compliance with degree program *scholarship requirements* is mandatory for entrance and continuation in the program. An informational interview is required when you apply for admission. This interview is generally held prior to entry into the program; if you enter at the time of registration you must present yourself for the interview before the end of the fourth week of that semester. The interview is informational in nature and is not utilized to restrict entrance to the program. 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 section of this catalog titled "Admission and Registration."

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 2 semesters of enrollment; *provided that,* if fewer than 26 hours were attempted in the previous 2 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. (For definition of scholarship index see p. 157).
3. An informational interview.

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 must also 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 senior on-campus residence requirement of this University.

ASSOCIATE OF ARTS DEGREE IN HUMAN SERVICES

The degree of Associate of Arts in Human Services is offered by the University of New Mexico through the University College.

The degree is available only to persons enrolled in the Albuquerque Concentrated Employment Program—New Careers, or other contract agencies, who complete its prescribed two-year curriculum.

For information regarding possible eligibility for this program contact New Careers Program, 1901 Las Lomas Road N.E. or call 277-3021.

DEGREE REQUIREMENTS

1. Enrollment in the Albuquerque Concentrated Employment Program—New Careers, or employment with other contract agencies.
2. 36 hours of credit in On-the-Job-Training.
3. 9 hours of credit in AAHS courses at the sub-baccalaureate level.
4. A total of 24 semester hours of baccalaureate level graded credit in courses numbered in the 100 and 200 series. Engl 101 and 102 are part of this requirement.
5. A UNM scholarship index of 2.0.
6. A minimum of 12 semester hours of UNM credit at the baccalaureate level.

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 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, Department of Pathology of the UNM School of Medicine.

ADMISSION

The total class enrollment in the Medical Laboratory Technician Program is limited to twenty-four. Students are admitted only in the fall semester. They will be accepted on the basis of scholarship, aptitude, and motivation.

Requirements for admission:

1. Admissibility to the University of New Mexico as described in the "Admission and Registration" section of the catalog.
2. Personal interview before the Laboratory Sciences Program Admissions Committee.

The deadline date for receipt of application and credentials required is April 1. Communications regarding entrance to the program should be directed to the Dean of Admissions, the University of New Mexico. Applicant should also arrange an appointment with the Director of the Laboratory Sciences Program before the deadline date. The Office of Admissions of the University will notify applicant of acceptance or nonacceptance.

CURRICULUM

First Year

Fall Semester		Spring Semester	
Engl 101 Wrtng w/Rdgs in Expos	3	Engl 102 Wrtng w/Rdgs in Lit	3
Math 121 College Alg or 150, 162	3-4	Chem 281 Org & Biochem	4
Chem 141L Elements of Gen Chem	4	Soc 101 Intro to	3
Biol 121L Principles of	4	Biol 122L Principles of	4
		Md Lab 100 Med Lab Science (Intro)	1
	14-15		15

Second Year

Fall Semester		Spring Semester	
Biol 136 Human Anat & Physio	3	Md Lab 201 Med Lab Science II	10
Phil 255 Scientific Method	3	Md Lab 202 Med Lab Science III	10
Elective	3		
Md Lab 101 Med Lab Science I	6		
	15		20

Summer Session

Md Lab 203 Directed Clinical Application 8

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 during the academic year.
3. Satisfactorily complete summer work 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 and the graduate will be eligible and expected to write the National Examination for Medical Laboratory Technician of the American Society of Clinical Pathologists.

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 five students, meet five days 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; preferably at least one week before registration begins.

TESTING DIVISION

The Testing Division is located in the Student Health Center and University College Building. The Division coordinates required testing by the University and administers individual tests requested by the Counseling Center and the University College advisement staff. The Division also serves as a center for national testing programs such as the Graduate Record Examinations, Miller Analogies Test, Law School Admission Test, American College Test, GED (high school equivalency test), 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 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 library which contains samples of

all standardized tests published in the areas of intelligence, achievement, aptitude, interest, and personality, is available to faculty, staff, students, and non-students.

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.

Freshman Year

First Semester		Second Semester	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Hist 101 Western Civ	3	Hist 102 Western Civ	3
Bus Ed 112 Interm Typ	3	Bus Ed 114 Shorthand Dictation	3
Bus Ed 113 Shorthand Theory	3	Bus Ed 262 Adv Typ	3
Sp Com 101 or 255 Fund of Spch or Pub Spkg	3	Elective	3
	15		15

Sophomore Year

Bus Ed 117 Off Mach & Filing	2	Bus Ed 257 Secretarial Administration	3
Econ 200 Prin and Probs	3	Bus Ed 265 Bus Communications	3
Bus Ed 253 Shorthand Transcription	3	Electives	9
§Electives	7		
	15		15

Electives would be taken from the following areas as determined by the student's major adviser:

English	Mathematics	Psychology	Geology
Fine Arts	Political Science	Sociology	Data Processing

A student who has had business subjects in high school would be advised to omit Bus Ed 112, 113, and 114. This arrangement would enable the student to select 9 more hours from the list of electives. Up to two hours in non-professional physical education courses may be taken for credit.

§ See Business Education advisers.

COLLEGE OF ARTS AND SCIENCES

THE COLLEGE OF ARTS AND SCIENCES offers instruction in subjects or fields which relate to man's cultural, social, and scientific achievement, with more regard to historical, philosophical backgrounds and relevancy of material. Although the fields of study offered in the College underlie the more specialized work of the graduate, professional, or vocational school, the degrees and courses of study are designed not as ends in themselves, but supply knowledge of mankind's and the student's own potentialities which will enable him to live better and later to perform better in his chosen field.

DEGREES

Upon the recommendation of the faculty and the President of the University, the degree of Bachelor of Arts or Bachelor of Science is conferred by the Regents upon those candidates who have completed all specified requirements. Differing requirements are specified for the Bachelor of Arts degree and for the Bachelor of Science degree if biology, chemistry, geology, or psychology is the subject of major study. A candidate who completes the requirements for a major in dietetics, mathematics, or physics will receive the degree of Bachelor of Science unless special request is made for the Bachelor of Arts degree. (Bachelor of Science in Medical Technology is the only choice of degree in that field.) A candidate who completes requirements with a major in any other subject will receive the Bachelor of Arts degree.

RELATION TO PROFESSIONAL AND VOCATIONAL COURSES

Courses preparatory to law, medicine, and the other professions are planned and taught as cultural subjects and do not infringe upon the work of the professional school. Concerning the acceptance of work in business and administrative sciences, education, engineering, law, medicine, nursing, pharmacy, and fine arts, see "Electives" and "Special Curricula."

ADMISSION

All freshman students are admitted to the University College. A detailed statement of entrance requirements is in the "Admission" section of this catalog.

ADMISSION FROM UNIVERSITY COLLEGE

Requirements for transfer from the University College into the College of Arts and Sciences 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 2 semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous 2 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.

3. Demonstrated competency in English writing. See College of Arts and Sciences office for details.
4. Of the 26 hours mentioned in "1" above, 23 hours must be acceptable towards graduation from the College of Arts and Sciences.
5. A student planning to major in one of the departments in the College of Arts and Sciences should transfer to the College from University College at the end of his second semester, if he has fulfilled the minimum requirements listed in points 1, 2, 3, 4 above.

TRANSFER FROM OTHER COLLEGES IN THIS UNIVERSITY

Transfer to the College of Arts and Sciences from another degree-granting college of the University of New Mexico requires a scholarship index of 2.0 on all work attempted while the student was enrolled in the other degree-granting college(s).

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS

A student seeking to transfer to the College of Arts and Sciences from another accredited institution must meet the University's general qualitative admission requirements for transfer and, in addition, must present a minimum of 26 semester hours, 23 hours of which must be in courses acceptable toward graduation from the College of Arts and Sciences.

TRANSFERRED GRADE OF D. Courses with grade of D transferred from another institution cannot be allowed for credit in the University of New Mexico. In certain sequences of courses in the College of Arts and Sciences, however, where grades of D from another institution are involved, it is possible for a student to secure a waiver of certain lower-division requirements. For information on this possibility, the student may consult the Dean of the College.

GRADUATION REQUIREMENTS

A degree from the College of Arts and Sciences is awarded upon completion of a program designed to give to the student access to a relatively broad range of knowledge in the liberal arts (group requirements) coupled with deeper penetration of two disciplines (the major and the minor). In addition, most students have the opportunity to select electives that accord with specific interests not satisfied by group requirements, major, or minor.

As soon as the student has earned as much as 80 semester hours toward his degree, he should pick up a degree application from the Dean's office, have it completed, and return it to the Dean's office. A summary showing exactly what is required for completion of the degree will be prepared and sent to the student. **The student is solely responsible for completing all requirements for graduation.**

Specific graduation requirements are as follows:

1. Completion of 128 acceptable semester hours, four of which may be physical education activity.

2. Either (a) a grade-point average of 2.0 on all college level work ever attempted, or (b) a grade-point average of 2.0 on the last 128 semester hours.

3. Completion of at least 40 hours in courses numbered 300 or above, with at least a 2.0 average in all such hours attempted.

4. Completion of major and minor (or approved alternative as shown elsewhere).

5. Completion of the Group Requirements described below.

6. A student expecting to graduate in June, 1973, must make application for his degree in the College of Arts and Sciences office by December 22, 1972.

GROUP REQUIREMENTS

The purpose of the following group requirements is to insure that the student will explore various fields of knowledge before beginning to concentrate too heavily in a field of his choice. The student should arrange his program so that he will be able to fulfill these group requirements as early in his career as possible. The following rule, therefore, is extremely important:

A student may not take any courses numbered 300 or above until 30 hours in courses that satisfy group requirements have been completed. In addition, so long as any deficiency in group requirements persists, a student may not take any courses numbered 300 or above unless at least a third of the credits taken at any time (including summer school) are devoted to eliminating the deficiency. Exceptions to these rules can be made only with written permission of the Dean of the College.

The acceptability of transferred work toward fulfilling group requirements lies in the judgment of the Dean of Admissions and the Dean of the College.

No course may be counted toward the satisfaction of requirements in more than one group. Although a course may be counted toward the fulfillment of both a group requirement and a major or minor requirement, no more than one group may be fulfilled in either the major or minor.

Courses in General Studies, taken in the Honors Program, may, with the approval of the Dean, be counted toward the satisfaction of group requirements in similar areas in Groups II, III, and IV, up to a maximum total of 6 hours.

Thirty-six hours are required from at least five of the six groups listed below. A student must take at least 6 hours in 4 of 6 groups for a total of 24 hours. The group that includes the student's major constitutes a fifth group. Courses taken in the major may be used to fulfill only one group. No course may be applied to more than one group. Courses requiring prerequisites should be avoided unless the student has fulfilled the prerequisites.

Effective Semester I, 1972-73, the requirements in the groups are as follows:

I. Communications.

English: Any course for which the student has the prerequisites in English writing and Linguistics except Engl 101.
Speech: Any course for which the student has prerequisites.
Linguistics: Any course for which the student has the prerequisites.
Journalism: Any course for which the student has the prerequisite.

II. Humanities. English literature, foreign literature, comparative literature, history, philosophy.

III. Natural Sciences and Mathematics. Biology, chemistry, geology, mathematics, physics and astronomy, psychology.

IV. Social Sciences. Anthropology, economics, geography, political science, sociology.

V. Foreign Language. Any course, except literature in translation, at whatever level is appropriate to the student's ability.

VI. Fine Arts. Any 6 hours from: Arch 101, 261, 262; Art 101, 130, 270, 271, 272; TA 115, 116; Music 139, 140, 171.

MAJOR AND MINOR STUDIES

At the beginning of his junior year a student shall select and declare (1) a major and a minor subject or (2) two major subjects, or (3) one of the special curricula of the College, and his program of studies thereafter shall meet with the approval of the chairman of his major department or the supervisor of the special curriculum.

Only work of at least C quality is accepted toward the major and the minor; in the case of a special curriculum, all work within the general area of the specialization must be of at least C quality. (Courses in which grades of D are earned in the University of New Mexico may be accepted as electives and in fulfillment of group requirements.)

For the Baccalaureate degree in the College of Arts and Sciences in departments requiring a major and a minor, the major department may specify in lieu of a single minor in one department a distributed minor in courses in related departments. The distributed minor shall consist of not less than 30 hours nor more than 36 semester hours. With the permission of the Dean, some relaxation may be allowed in the rules relating to number of hours required in courses numbered 300 or above and to penalties for excessive hours in freshman courses when these rules are in conflict with distributed minor requirements. In all cases, however, the student will be expected to have at least 35 hours in courses numbered 300 or above. The student should consult the chairman of his major department if he wishes to take a distributed minor.

A distributed minor in Comparative Literature or in Russian Studies may be elected by candidates for either the Bachelor of Science or Bachelor of Arts degree. A distributed minor in American Studies is also available for students majoring in Anthropology, Economics, English, History, Philosophy, Political Science, or Sociology. A distributed minor in Paleoecology is offered to students majoring in Anthropology, Biology, Chemistry, or Geology.

CERTIFICATION TO TEACH IN HIGH SCHOOL

It is often possible for a student taking a degree in the College of Arts and Sciences to achieve certification as a secondary school teacher in New Mexico on the same basis as students graduating from the College of Education and without going beyond the 128 semester hours required by the College of Arts and Sciences for graduation. To do this, however, requires careful planning of the program. In certain major-minor combinations a student cannot achieve the B.A. or B.S. degree from the College of Arts and Sciences and also achieve

teacher certification without taking more than 128 semester hours. The plan is possible only when the major-minor combination (or double major) is in subject areas usually offered in high school (see College of Education section for approved areas). All students at the University of New Mexico who expect to follow a course of study leading to certification are subject to the requirements for admission to teacher education listed in the College of Education section of this catalog

In selecting courses to meet group requirements, students seeking both teacher certification and a bachelor's degree in Arts and Sciences must include the following courses:

1. A course in speech and a course in general psychology.
2. Hours offered in laboratory science must be taken in biology, chemistry, geology, physics, or astronomy.
3. At least 6 hours in fine and practical arts.

Recently the minimum number of hours required for teaching in New Mexico was raised. Twenty-four semester hours of credit in a teaching field are now required in English, Foreign Language, and Mathematics. In other fields 24 hours are required in the area, of which 10 semester hours of credit must be in the specific subject to be taught. In 1973 the 10 semester hour requirement in specific science subjects will be raised to 12 semester hours.

Please check with the Arts and Sciences office or the College of Education for courses included in each teaching field in addition to the specific subjects to be taught.

COMBINED CURRICULA

Degrees in both the College of Arts and Sciences and the College of Engineering may be obtained by following a 5-year curriculum to be outlined in each case, jointly, by the deans of the two colleges. Any student interested in this curriculum should confer with the deans before the end of the sophomore year.

A combined preprofessional program in the College of Arts and Sciences and the School of Business and Administrative Sciences leading to both a bachelor's and a master's degree in 5 years has recently been initiated. Termed the "Three-Two" M.B.A. proposal, a student may complete his group requirements and major in the College of Arts and Sciences his first three years, then complete a minor his fourth year in courses from the School of Business and Administrative Sciences as outlined in that section of this catalog.

Students expecting to follow this program should confer with representatives of the college offices by the beginning of their sophomore year.

MAJOR OR MINOR OUTSIDE THE COLLEGE OF ARTS AND SCIENCES

Students may major in Home Economics or in Fine Arts by arrangement with the College of Education and the College of Fine Arts, respectively. Minors taken in other colleges include Art, Business and Administrative Sciences, Engineering (with Geology B.S. or Mathematics major only), Music, Naval

Science, Special Education, Theatre Arts, and Library Science. A student may not elect both a major and a minor outside the college.

The minor in art consists of 21 semester hours distributed as follows: 6 hours in the introductory course, Art 123; 15 remaining hours of which at least 6 must be at the 300 level or above in one of the accredited fields offered by the Department of Art.

Students may also minor in Business and Administrative Sciences while in the regular four year Arts and Sciences program. Minors in Business and Administrative Sciences for students majoring in Economics and other areas should inquire in the College of Arts and Sciences office for courses recommended.

FOR CURRICULA RELATING TO FOREIGN STUDIES

See "Language and Area Center for Latin America," "Division of Inter-American Affairs," "Department of Political Science," and "Russian Studies."

ELECTIVES

Students may complete their degree programs by electing courses freely from the College of Arts and Sciences as well as from any other college or colleges with the following exceptions:

(1) Courses in typing or in office machines and filing in the College of Education.

(2) Ensemble music in excess of 4 hours.

(3) Shop work in excess of 3 hours.

(4) Courses in health, physical education, and recreation in excess of 7 hours, the 7 permissible hours to be chosen from courses HEd 171, 312, PE 397, 398, 399, 466, 489, Recrea 175, 452, 480.

(5) Courses in educational methods, supervision, and practice teaching, except 3 hours of high school methods and 6 hours of high school practice teaching. (If the student has taken the full 24 hours of Education plus the additional courses required for certification to teach in a New Mexico high school, these 24 hours will be accepted in the College of Arts and Sciences. See "Certification, etc.," above.)

(6) All courses in elementary education, nursing, and pharmacy which are primarily vocational or directed toward professional practice.

GENERAL RULINGS

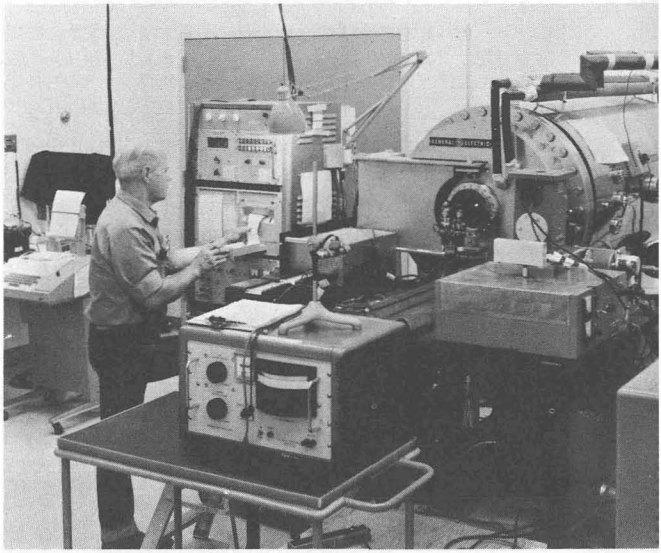
1. Students with less than junior standing may not carry more than 8 hours in one department during one semester.

2. Not more than 50 hours in courses open to freshmen may be taken without a penalty of 1 hour for every 3 excessive hours.

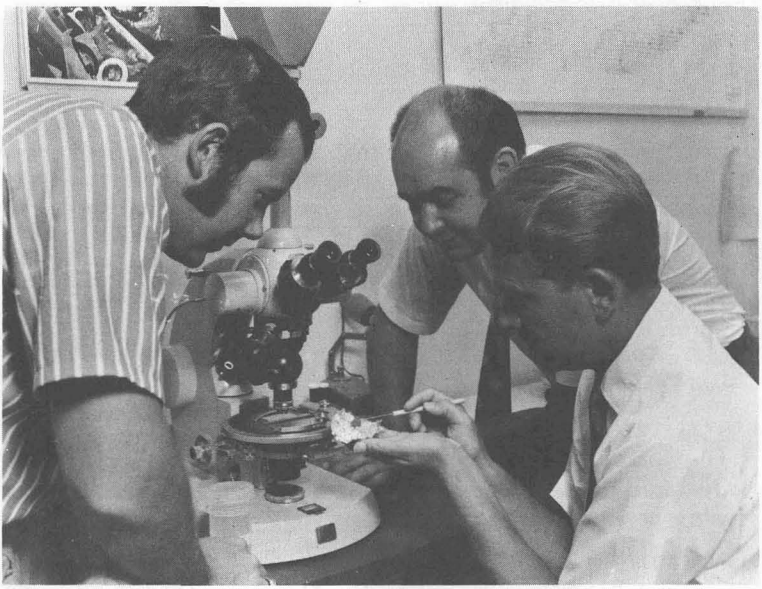
Exceptions to these rules may be made only by the Dean.

FRESHMAN-SOPHOMORE PROGRAMS

Normally students enrolled as freshmen in University College take only courses numbered 100-199. Courses numbered 200-299 are open to sophomores. Deviations from this selection of courses should be made only with the permission of the University College adviser or the Dean of the College.



A Physics Laboratory



Lunar Samples— Department of Geology

Department of Anthropology— Maxwell Museum

PRE-PROFESSIONAL AND OTHER CURRICULA

Students are cautioned against assuming that 4-year college courses always prepare for professional work. At least one year of specialized graduate work is advisable, 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.

Students wishing advice concerning curriculum preparatory to professional studies in Forestry may consult Professor Loren D. Potter, Department of Biology; those interested in curricula preparatory to Medicine or Dentistry may consult Dr. Earl Bourne, Chairman of the Premedical Advisory Committee; those interested in Medical Technology may consult Dr. John Beakley, Department of Biology.

CURRICULUM PREPARATORY TO DENTISTRY

The minimum requirement for admission to accredited dental schools is two years of acceptable academic work with a scholarship index of 2.5. In general the predental program is identical with the premedical curriculum outlined below.

The student should select the dental school(s) to which he plans to seek admission, and then, with the assistance of the predental adviser, plan a course of study which will meet the admission requirements of the school(s) in which he is interested. A student who plans to do more than 2 years preparatory to entering a dental school should select courses which will give him a broad liberal arts background as well as courses which will prepare him for the more technical requirements of dental school.

Ordinarily, the student will be expected to plan his academic program in such a manner that, if his plans to go to dental school do not materialize, he will still have made progress towards a baccalaureate degree.

Further information and advice may be obtained from Dr. Earl Bourne, Chairman, Premedical Advisory Committee, Department of Biology.

CURRICULUM PREPARATORY TO FORESTRY

Because of the variable admission requirements of different schools of forestry, the student is advised to seek admission information from the Department of Biology. Two years of preforestry are available.

CURRICULUM PREPARATORY TO MEDICINE

The requirement for admission to medical schools approved by the Association of American Medical Colleges and by the Council on Education of the American Medical Association is ordinarily at least 90 semester hours in a college of arts and sciences. However, because of the large number of applications to medical schools in recent years, it is difficult to gain admission without a bachelor's degree.

Although the requirements for admission to the various medical schools in the United States vary somewhat, there are certain basic minimum science requirements common to all. These include one year of general biology, general chemistry, a year of organic chemistry, a year of physics, and a year of mathe-

matics with calculus. In addition, 27 of the 110 approved schools specifically require quantitative analysis, 11 require embryology, and 18 require qualitative analysis or physical chemistry. A few include specific language requirements and courses in the social and behavioral sciences. Exact requirements for each school are included in **Medical School Admission Requirements, U.S.A. and Canada,** a volume put out each year by the Association of American Medical Colleges. Students interested in a particular school should consult this volume.

In recent years medical schools have increasingly tended to give equal consideration for admission to students majoring in the humanities or social sciences. A liberal background and breadth of education are felt to be desirable for anyone seeking a professional career. Good performance in the minimum science requirements is particularly important for these students, however, since they must demonstrate that they can handle the quantitative scientific material which is crucial in the modern medical curriculum.

Students interested in medical school generally take the Medical College Admissions Test in the spring of their junior year or the fall of their senior year. Hence it is advisable to complete the minimal basic science requirements by the end of the junior year. Because there are many more applicants for admission than there are places available, there is no assurance that a given student will qualify. Students should, therefore, select their major fields on the basis of their own interests, rather than from the limited viewpoint of specific pre-professional education.

Premedical students expecting to major in biology or chemistry are advised to complete the following course of studies during the first two years. Those majoring in the humanities or social sciences will need to take the same basic science courses before admission to medical school, but they will be able to spread them over a somewhat longer period.

First Year		Second Year	
Engl 101, 102	3–3	Engl Lit, Psych 101	3–3
Chem 101L, 102L or 121L, 122L	4–4	Chem 301, 303L, 302, 304L	4–4
Biol 121L, 122L	4–4	Humanities or Social Science	3–3
Math 150-151 or 162 or 180-181	4–6	Physcs 151, 152, 153L, 154L	4–4
Electives	3–3	Electives	3–3

Further information and advice may be obtained from Dr. Earl Bourne, Chairman of the Premedical Advisory Committee, Department of Biology.

MEDICAL TECHNOLOGY CURRICULUM

Certification as Medical Technologist

For requirements relating to certification as a medical technologist without a bachelor's degree, write to The American Society of Clinical Pathologists, Board of Schools, 710 South Wolcott Avenue, Chicago, Illinois 60612. After December 1, 1972, only those students will be admitted to an approved School of Medical Technology who either have a baccalaureate degree or whose transcript indicates a program which will culminate in a baccalaureate degree upon successful completion of the medical technology program. After December, 1973, students will not be admitted to the Registry (Medical Technology) examination without a degree.

The UNM School of Medicine has such an approved 12-months course in Medical Technology.

Degree of Bachelor of Science in Medical Technology

The curriculum and requirements leading to the degree of Bachelor of Science in Medical Technology are listed below. Following the prescribed academic work, candidates for the degree must satisfactorily complete a 12-month medical technology program at a school of medical technology approved by the American Society of Clinical Pathologists. Before completing the year's work at the school of medical technology, for which 32 hours are allowed if taken at the University of New Mexico Medical School, the student must satisfactorily complete a minimum of 96 hours of which 4 may be P.E. Students transferring to UNM with the intention of going to the UNM Medical Technology School must complete a minimum of at least 30 hours in residence on the UNM campus after having attained junior status. Of the 54 hours of specified courses in science and mathematics, not fewer than 21 hours shall be earned in residence on the campus of the University of New Mexico.

UNM students planning to take their hospital 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, Dr. John Beakley, Department of Biology, as early in their student careers as possible.

PRESCRIBED PROGRAM—MEDICAL TECHNOLOGY

First Semester		Second Semester	
Freshman Year			
Chem 101L Gen or 121L	4	Chem 102L Gen or 122L	4
Biol 121L Princ	4	Biol 122L Princ	4
*Math 180	3	*Math 181	3
Engl 101	3	Engl 102	3
A&S group requirement	3	A&S group requirement	3
	17		17
Sophomore Year			
**Chem 253L Quant Anal	4	Chem 302-304L Organ	4
Chem 301-303L Organ	4	Biol 429L Cell Phys	4
Biol 393L Gen Bact	4	A&S group requirement	6
A&S group requirement	3	Elective	3
	15		17
Junior Year			
Physcs 151-153L Gen	4	Physcs 152-154L Gen	4
Biol 454L Path Bact	4	Electives	11
Electives	7		
	15		15
Senior Year			
Med Lab Sci 401	16	Med Lab Sci 402 Clin	16
	16		16

Total number of hrs. required—128, 4 of which may be P.E. activity.

* Math 150-151 or 162 accepted.

** Not required if Chem 121L and 122L taken.

After completing the above course program and completion of a 12-months' 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.

LATIN AMERICAN CENTER

Marshall R. Nason, Professor of Modern Languages, Director

Advisory Committee: Professors M. Nason (Chairman), B. Bunting (Fine Arts), S. Cohen (Economics), R. Holemon (Education), E. Lieuwen (History), G. Merkx (Sociology), M. Needler (Political Science), W. Roberts (Modern Languages).

The Latin American Center, partially supported by federal funding under NDEA Title VI, is an administrative unit of the College of Arts and Sciences and the Graduate School. It does not directly offer any degree programs or courses but is responsible for coordination and technical services in connection with the University's total program of academic work in the Latin American field. It prepares studies, reports, and proposals, and is concerned with plans for course offerings, staffing needs, coordination of library purchases, the interchange of scholars, and the arrangement of lecture series.

Applications for NDFL Title VI and for Fulbright-Hays fellowships are also received and processed by the Center.

Students interested in pursuing courses of study related to Latin America should consult the catalog listings under "Division of Inter-American Affairs" (immediately below), "Ibero-American Studies," and the Departments of History and Modern and Classical Languages, as well as offerings in the social science fields of anthropology, economics, political science, and sociology.

The Latin American Center is the administrative unit responsible for the overseas study program of the Andean Study and Research Center at Quito, Ecuador. (See below.)

DIVISION OF INTER-AMERICAN AFFAIRS

Martin C. Needler, Professor of Political Science, Director

The Division of Inter-American Affairs is an administrative unit of the College of Arts and Sciences and of the Graduate School. Founded in 1941, the division offers the Bachelor of Arts and Master of Arts degrees in the field of Latin American Studies.

The undergraduate curriculum in Latin American Studies is designed to provide basic training in fundamental subjects and a choice of supplementary courses to meet individual needs and preferences. Emphasis is given equally to language study and the social sciences. Proficiency in Spanish and a reading knowledge of Portuguese are basic requirements for the Latin American major and students are encouraged to use the languages as tools in various advanced courses in the program. For degree requirements, see course listings under "Latin American Studies."

ANDEAN STUDY AND RESEARCH CENTER, QUITO, ECUADOR

Marshall R. Nason, Professor of Modern Languages, Director

In order to provide advanced and graduate students in Latin American language and area studies an opportunity for overseas field work, study and research, the University has established an Andean Study and Research Center at Quito, Ecuador. The Center also serves as a research base for faculty and graduate degree candidates and is equipped with microfilm equipment and other facilities appropriate to such activity.

The Andean Center constitutes a physical transfer of a portion of the Albuquerque-based Latin American Language and Area program to an overseas site and is, therefore, a fully accredited program designed to serve the student's degree requirements while giving him significant cross-cultural exposure and the opportunity to improve his language skills. The study plan is designed to maximize the advantages of the South American location; it offers optimum opportunities to work with host-country specialists and to observe directly the social and cultural realities of a region which, because of its great diversity, constitutes virtually a Latin American microcosm.

By keeping the cost of study at the Andean Center (including international and in-country travel) at a figure close to the outlay of a UNM student living in a University residence hall, it is hoped that all aspirants to specialization in the Latin American field, both graduate and undergraduate, will find it possible at some point in their training to avail themselves of this exceptional opportunity for study and research abroad.

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. The building houses all classroom and administrative functions and provides certain social conveniences for the students. Enrollees, generally, reside in Ecuadorian homes.

The program of studies is so structured that the study of Latin American history, languages (including Portuguese) and literatures are standard components. Emphasis in the social sciences, other than history, may vary from year to year. Efforts are also being made to provide special training for students in pre-professional fields such as journalism and education. Students desirous of informing themselves as to the exact course offerings for any semester should contact the Director, Latin American Center. The Quito Center is staffed by a Resident Director chosen from the UNM faculty, an Ecuadorian Associate Director and a binational teaching faculty consisting of UNM and Ecuadorian specialists.

Enrollment is open to juniors, seniors, and graduate students in good standing at the University of New Mexico or any other students eligible for admission to the University of New Mexico, provided they have the necessary linguistic skills to accommodate classroom work in Spanish and the normal requisites for upper division work. However, students should be reminded of the senior residence rule on p. 164, which states that those who wish to fulfill senior residence requirements at Quito must have completed 30 hours in residence on the University of New Mexico campus prior to enrolling at the foreign center. A pre-registration system has been provided for scheduling of courses and payment of fees prior to

group departures for Quito. Students potentially interested in attending the Center should place themselves on the Latin American Center mailing list for special advisory releases.

Students who are recipients of University fellowships, scholarships and Title IV or VI grants (i.e., those which do not require that the recipient render specific service at Albuquerque) may utilize such assistance at the Andean Center. Some scholarship assistance is available through the Associated Students of the University of New Mexico and the Graduate Student Association.

N.R.O.T.C. CURRICULUM (See pp. 293-295).

DEPARTMENTS OR PROGRAMS OF INSTRUCTION

The College of Arts and Sciences offers work in the fields listed below:

American Studies
Anthropology
Biology
Chemistry
Communicative Disorders
Comparative Literature
Economics
Economics-Philosophy
English
English-Philosophy
Geography
Geology
History
Ibero-American Studies†
Journalism
Latin-American Studies
Linguistics and Language Pedagogy
Mathematics and Statistics
Modern and Classical Languages
Paleoecology
Philosophy
Physics and Astronomy
Political Science
Psychology
Russian Studies
Sociology
Speech Communication

Major and minor requirements and descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction." The student is also referred to the Departments of Art, Home Economics, Library Science, Music, Naval ROTC, Special Education, Theatre Arts, and School of Business and Administrative Sciences for major or minor studies acceptable in the College of Arts and Sciences.

† Ph.D. program only.

SCHOOL OF BUSINESS AND ADMINISTRATIVE SCIENCES

CURRICULA IN the School of Business and Administrative Sciences are designed to give broad experience in the liberal arts and applied sciences as preparation for productive living and progress toward executive responsibilities. The student will find his studies spread over diverse disciplines throughout his four years so that he may maximize his opportunities to apply wide ranging facts, opinions, and techniques to the art of decision-making. Whether a student's objective be that of proprietor or partner in a firm, executive in a private corporation, or officer in a public or quasi-public institution, the core work presented is basic to the appreciation and practice of the administrative function.

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 fields of economics and business and comprises 40 percent or more of the entire four-year program; the second division is that of a group of courses in managerial controls, organizational sciences, operations and environment specifically required of all students in the School; the third division comprises a group of electives of the student's own choosing. The four-year B.B.A. program provides the opportunity for a 24-hour concentration in Accounting or limited specialization in the fields of Finance, Marketing, Organization Theory, and Management Science.

DEGREES OFFERED

The School of Business and Administrative Sciences offers two degrees. The Bachelor of Business Administration degree requires satisfactory completion of a four-year (125 hours) course of studies. For specific admission and graduation requirements see below, or see the **Bulletin of the School of Business and Administrative Sciences.**

The School offers two programs leading to the Master of Business Administration degree. One program is for persons already having completed a bachelors degree. For information concerning the Master of Business Administration degree, consult the **Graduate School Bulletin** and the separate **Bulletin of the School of Business and Administrative Sciences.**

A second program leading to the M.B.A. degree is offered by the School of Business and Administrative Sciences jointly with cooperating departments in the University. It is a special honors program which permits a student to complete a bachelors degree in a field outside of business and an M.B.A. degree in five years. This program 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 primarily to complete the requirements of the graduate program of this School. This program is described below as the "Three-Two 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

The School of Business and Administrative Sciences is establishing a new Upper Division program leading to the Bachelor of Business Administration degree. This program will provide for two years of preprofessional work, normally taken in the University College, and two years in the School of Business and Administrative Sciences.

ADMISSION

All freshman students are admitted to the University College. A detailed statement of admission requirements for that College is in the "Admissions" section of this catalog.

ADMISSION FROM THE UNIVERSITY COLLEGE

The minimum requirements for transfer from the University College to the School of Business and Administrative Sciences are:

1. Sixty-two hours of earned credit.
2. A scholarship index of at least 2.0 on all hours attempted.
3. Grades of "C" or higher in each of the "Specific Requirements."
4. Satisfactory competence in both written and spoken communications. Students should be advised that effective communications (both oral and written) are essential for satisfactory performance in the upper division courses of the School of Business and Administrative Sciences. 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 year's work.
5. Completion of the following course requirements:
   a. General Education Electives
      (1) **Humanities** (English-Literature, Modern Languages, Philosophy, Speech Communication) 9 hours
      (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 better must be earned in each of these courses. These courses are prere-

quisites for all 300 and 400 level courses in the School of Business and Administrative Sciences

(1) Math 121, 122, 180 (or the equivalent)	9 hours
(2) Econ 200, 201	6 hours
(3) Behavioral Sciences—Psych 102, Soc 101, and one additional course in Psychology or Sociology at the 200 level or above	9 hours
(4) Statistics—Math 102, B&AS 290	4 hours
(5) Computer Science—Math 155 (or the equivalent)	3 hours
(6) Introduction to Accounting—B&AS 202	3 hours
c. Electives	6 hours
Total	62 hours

APPLICATION FOR ADMISSION

Application for admission to the School of Business and Administrative Sciences 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.

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 from the University College (see items 1-5 above).

TRANSFER FROM OTHER ACCREDITED INSTITUTIONS

Transfers must meet normal requirements for admission to this University. In view of the rather distinctive nature of our Business and Administrative Sciences program, it is the general policy of this School not to accept as transfer credit work in Business and Administrative Sciences completed elsewhere at the junior and senior levels.

GRADUATION REQUIREMENTS

To graduate with the degree of Bachelor of Business Administration the following requirements must be met:

1. Completion of all pre-admission requirements.
2. Completion of a minimum of 125 hours (excluding PE) with a scholastic index of at least 2.0 on all semester hours attempted at the University of New Mexico, except that those University College hours with grade points that had not been certified for entrance to the School of Business and Administrative Sciences may be excluded.
3. Completion of a minimum of 52 hours in courses in Business and Administrative Sciences and Economics (including B&AS and Economics

Business Administration Building

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 18 hours in Economics and Business and Administrative Sciences while enrolled in this School.

5. Course requirements. The specific courses required to be taken in the second two years of the program have not yet been designated, but will be announced in the **Bulletin of the School of Business and Administrative Sciences** to be issued this summer. Students who were admitted to the B.B.A. program before and during the 1971 fall semester will graduate under the requirements listed in the 1971-72 issue of the catalog. Other students who have completed 62 or more hours, including substantially all of the specific requirements listed above under "Admission," may be admitted for the 1972 Fall semester. Such students should remove any admission deficiences during their first semester of enrollment in the School. In addition they may begin their work on the Business and Administrative Sciences core by taking courses selected from the following: B&AS 225, 308, 310, 329, 330, Econ 300, 315. Since the B.B.A. program for the third and fourth years will provide for electives to be taken outside the School of Business and Administrative Sciences, students first enrolled in the School in the 1972 Fall semester may include six hours of such electives in their programs during that semester. Students newly enrolled in the School of Business and Administrative Sciences would be well-advised to seek the guidance of the Registrar's Office in the School.

THE "THREE-TWO" PROGRAM FOR THE MASTER OF BUSINESS ADMINISTRATIVE DEGREE*

Completion of the "Three-Two" program is accomplished in the following manner:

1. For the first 3 years of his 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, application is made for admission to the M.B.A. program of the School of Business and Administrative Sciences.
3. In his 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 his undergraduate field. Cooperating departments throughout

* Students who will have earned a Bachelor's degree prior to entering the M.B.A. program should refer to the Bulletin of the **School of Business and Administrative Sciences** for details concerning admission, curriculum and degree requirements. Copies of this Bulletin may be obtained from the Coordinator of Graduate Studies, School of Business and Administrative Sciences, The University of New Mexico, Albuquerque, New Mexico, 87106.

the University will accept the courses in Business Administration taken during this year as constituting a minor for the purposes of the Bachelor's degree. At the end of the fourth year, all requirements for the Bachelor's degree will ordinarily have been met and the degree awarded.

4. During the fourth year of academic work, application is made for admission to the Graduate School. In order to continue in the M.B.A. program, the student is expected to meet the following requirements: (a) complete the Bachelor's degree requirements with an overall grade point average of 2.5; (b) maintain a "B" average in Business and Administrative Sciences courses; and (c) be accepted for admission by the Graduate School.

5. In his fifth year of study, the student will complete 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 30 hours with thesis or 32 hours without thesis **while enrolled in the Graduate School.**

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 program. Application should be made to the Coordinator of Graduate Studies, Room 290, School of Business and Administrative Sciences in the semester preceding the beginning of the fourth year. The deadline for application is July 1 for the fall semester and December 1 for the spring semester. **No undergraduate student will be permitted to enroll in any 500 level course offered by the School unless he 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 towards the Bachelor's degree. Not less than 30 of these hours must have been taken at the University of New Mexico.

2. A minimum grade point average of 2.5 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 Admission Test for Graduate Study in Business must be submitted to the School. This examination is administered by the Educational Testing Service. Detailed information about the test and appli-

cation 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). In view of the rather distinctive nature of our Business and Administrative Sciences program, it is the general policy of this School not to accept as transfer credit work in Business and Administrative Sciences completed elsewhere at the junior and senior levels.

DEGREES IN COMBINATION WITH OTHER COLLEGES OF THIS UNIVERSITY

At the graduate level, joint programs are being planned with the School of Law, Department of Nuclear Engineering, and the Department of Architecture. The student must satisfy the academic requirements of both entities, and early consultation on his curriculum with the respective schools or departments is encouraged.

BREADTH REQUIREMENTS

It is the objective of the School of Business and Administrative Sciences to offer graduate, professional education within an intellectual framework provided by a broad liberal arts pre-professional program. As a general guideline, **minimum** breadth requirements for entry into the fourth year of the program are:

Humanities English, History, Literature, Modern Languages, Philosophy, Speech	15 hours
Social Sciences Anthropology, Economics (except 201, 300, 303), Geography, Political Science, Psychology, Sociology	15 hours
Laboratory Sciences Biology, Chemistry, Geology, Physics	8 hours

In addition to the above, students are urged to complete Econ 201, 300, and 303, and Math 162-163 or 180-181

The faculty of the School has identified a set of recommended courses which it believes provides the kind of undergraduate preparation that is appropriate as a basis for study in Business and Administrative Sciences. This set of courses is listed below. Most of these courses can also be used in partial fulfillment of the group requirements of the College of Arts and Sciences. Together with a major selected by the student within the College of Arts and Sciences, these

recommended courses provide an ideal preparation for work in this School. It should be emphasized, however, that many other possible combinations of course work in Arts and Sciences or in other Colleges of the University can provide equally acceptable preparation. For this reason, few specific course requirements have been established as prerequisites for admission to the first year of the M.B.A. program. Each application will be considered individually with respect to the breadth requirement. In instances where 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.

Recommended Courses for the First Three Years of the "Three-Two" Program

English and Literature	9 hours
Econ 201, 300, 303	9 hours
Behavioral Sciences (Recommended courses: Psych, Soc-Psych, Anthro)	10 hours
Political Science	3 hours
History and Philosophy	9 hours
Math 180 and 181 or 162 and 163	6-8 hours
Laboratory Science	8 hours

A student who has not taken the Mathematics and Economics courses listed above may still be admitted. He will, however, be required to take one or two additional courses offered by the School during his fourth year. These additional courses may increase the length of his 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 School of Business and Administrative Sciences at the earliest possible date in their academic career. Cooperative planning by the student, his adviser in the major field, and an adviser from this School should enable 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.

THE M.B.A. PROGRAM

First Year Core Courses:

B&AS 500 and 501	Quantitative Analysis I and II	6
B&AS 502 and 503	Accounting and Management Information Systems I and II	6
B&AS 504 and 505	Organizational Economics I and II	6
B&AS 506 and 507	Organizational Behavior I and II	6
B&AS 508	Organizational Ecology	3
B&AS 509	Organizational Intelligence Systems	3
		30

Second Year Core Courses:

B&AS 520	Operations Research and Production Management	3
B&AS 522	Marketing Management	3
B&AS 526	Financial Management	3
B&AS 598	Seminar in Integrative Management	3
	*Electives	18
		30

The fifth year course of studies is the normal second year of the M.B.A. curriculum. A reasonable degree of specialization is possible in the areas of Accounting, Finance, Marketing, Management Science, and Organizational Behavior. See the **Bulletin of the 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. program may be obtained from the Coordinator of Graduate Studies, Room 290, School of Business and Administrative Sciences.

*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 EDUCATOR holds a key position in our society. He creates conditions which encourage learners of all ages to realize their own potential. The major purpose of the College of Education is the effective preparation of such professional educational personnel as teachers, counselors and administrators. This mission is carried out with the cooperation of other colleges within the University of New Mexico.

The many programs of the College of Education prepare persons for positions at all levels of schooling from the primary level through the university level. The programs also prepare persons to hold positions in a variety of educational organizations from public school systems to educational organizations designed especially to serve particular minorities.

As our society becomes more complex, the educational settings will become more diverse and more demanding upon the professional educator. For this reason new professional roles are expected to emerge. It is the responsibility of the College of Education, therefore, to examine the institution of education in our society and to develop new curricula to prepare personnel capable of functioning in these new educational settings.

ACCREDITATION AND CERTIFICATION

Because 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 of this institution's teacher education programs are eligible to apply not only for appropriate certification to teach in New Mexico, but also for comparable certification (same level and/or same subject field) in all of the 28 states of the United States which have entered voluntarily into a reciprocity agreement for certification based upon NCATE accreditation of institutional programs.

Every University of New Mexico program which leads to teacher certification for New Mexico elementary and secondary schools includes at least four years of college work. The completion of a bachelor's degree in one of these programs at the University makes the person eligible to apply for a **4-year Provisional Certificate** in New Mexico. This certificate entitles the holder initially to teach in the State for four years and may be renewed only once for an additional four years. Forms for application for a New Mexico certificate are available from the College Recorder in the College of Education.

By the end of the eight-year period of provisional Certification the holder must qualify for either the Continuing Certificate or the Professional Certificate or other special field certificates. Persons interested in these certificates should consult the **Graduate School Bulletin,** department chairmen in the College of Education, or the dean of that college.

Certification may also be obtained in the areas of Special Education, Guidance and Counseling, School Administration, Teaching English as a Second Language, and Reading Specialist. For further information consult department chairmen in the College of Education.

CONTINUING CERTIFICATE.† Students desiring the **Continuing Certificate** must complete a 30 semester-hour graduate program not necessarily culminating in a master's degree. The major portion of credits in this program must be in subject-matter areas.** Each student desiring this certificate must plan a program with an adviser. This is a five-year certificate and may be renewed for five-year periods.

PROFESSIONAL CERTIFICATE.† Students desiring the **Professional Certificate** must complete a master's degree, the major portion of which must be graduate credit earned in subject matter areas.** All master's degree programs at the University of New Mexico do not necessarily meet such requirements. Students interested in obtaining this certificate should consult the **Graduate School Bulletin** and their advisers in the College of Education **before** planning a master's degree program. This certificate does not need to be renewed.

DEGREE PROGRAMS

The College of Education offers programs leading to an Associate of Arts in Education degree. Enrollment is limited to participants in special projects; further information can be obtained from the Dean's office.

Many bachelor's degree programs are offered which prepare undergraduate students for a variety of professional educational roles, as well as for professional roles in related areas such as Recreation and Dietetics. In later sections of this catalog, curricula for all of these programs are described.

The College of Education offers, through the Graduate School, programs leading to the master's degree, the Doctor of Philosophy degree, and the Doctor of Education degree. Sixth-year graduate programs leading to "Certificate of Education Specialist" are also available. Consult the current **Graduate School Bulletin** and appropriate departments for details of these programs.

SCHOLASTIC REQUIREMENTS

See pp. 159-162.

DEPARTMENTAL HONORS

A departmental honors program is offered in several of the departments of the College of Education. Application for participation in the program must be made during the junior year. The program may consist of any one of the following: (1) a senior thesis, (2) a reading and tutorial program under the major adviser, (3) honors in student teaching. All students permitted to enter the honors program will meet University regulations as described on pp. 166-169. Permission of the major adviser is required for enrollment in 497 courses, Reading and Research in Honors.

MAXIMUM NUMBER OF HOURS

Students enrolled in the College of Education may not enroll for more than

† Detailed information concerning curriculum may be found in other sections of this catalog.

** With the exception of the Language Arts programs and Children's Literature area, only courses listed under a specific subject (usually offered in the College of Arts and Sciences) in the catalog are considered "subject matter" areas.

19 hours during a regular semester, or 10 hours during a summer session unless:

1. Grades for the previous semester were B's in two-thirds of the coursework, with no grade below C, and,
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 non-professional physical education courses will be counted toward graduation.

ADMISSION TO A TEACHER EDUCATION PROGRAM

It is not necessary to be enrolled in the College of Education in order to pursue certain teacher education programs offered through the College of Education. Students majoring in Art Education or Music Education may be enrolled in the College of Education or the College of Fine Arts. Students majoring in Home Economics or general Secondary Education may be enrolled in either the College of Education or the College of Arts and Sciences. (Descriptions of specific requirements may be found in those college sections). Students majoring in all other teacher education programs must be enrolled in the College of Education (See ADMISSION TO THE COLLEGE OF EDUCATION). If you are not enrolled in the College of Education but expect to become certified, you are urged to keep in close touch with the College in the planning of programs and choice of electives.

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. (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).

If you wish to apply for admission to a teacher education program you must meet the following requirements:

1. 26 hours of earned credit.
2. An overall University of New Mexico grade point average of 2.0; or, a 2.0 on the last two semesters or 30 hours (University College students only). Grades earned at another institution will substitute for the University of New Mexico grade point average during the student's first semester of enrollment.
3. Completion of an Application to a Teacher Education Program form, available in the Office of the Dean, College of Education.
4. Attendance at a Screening Session. These sessions are held once during each semester and summer session, in February, June and September.

5. Successful completion of all tests administered at a Screening Session.
6. Evidence of a satisfactory performance on a standardized academic ability test.
7. A successful interview with a College of Education faculty member, in which the student indicates a positive desire and intent to enter the teaching profession, and gives evidence of physical, personal and emotional qualities deemed adequate for successful teaching.
8. Completion of a departmental physical fitness test for all men physical education majors.
9. Successful completion of Sp Ed 250 and 271 taken **concurrently with** screening into the Special Education program (majors only).
10. Successful completion of Art Ed 220 taken **concurrently with** screening into the Art Education program (majors only).

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 chairman of the department offering the program you wish to enter for further information concerning specific requirements and/or limitations.

NOTE: Any student admitted to a teacher education program after the first semester of the 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, BUS or in non-degree status, you will not be eligible to transfer to the College of Education until this screening process is completed. Students transferring from other institutions are 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.

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, contact the Office of the Dean of the College of Education for information concerning curricula and enrollment requirements. Students who are selected to work toward an Associate

of Arts in Education degree 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. 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, and the 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 and youth. These pre-student 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 carried on under the personal direction of selected cooperating teachers in the Albuquerque area public and private school systems and professors from the University. The University of New Mexico is indebted to the administration and teachers of the Albuquerque Public Schools 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

1. Earned an overall grade point average at the University of New Mexico of at least a 2.0; specifically, the student may not be on probation.

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 (elementary or secondary) the **spring before** the actual student teaching begins.

4. A T.B. skin test is required. 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 general grade-point average of at least 2.0 (C) in all courses attempted at the University of New Mexico. Graduate students must also meet these requirements and maintain a 3.0 grade-point average.

6. Achieved a grade-point average of at least 2.3 in all courses attempted in the major teaching area. Some departments may and do require a higher

COLLEGE OF
EDUCATION

grade-point average. Removal of all D's and F's in the major field for physical education majors.

7. Completed Sp Com 256 (or approved substitute).

8. Completed satisfactorily all prerequisites for student teaching listed in the current University catalog.

9. 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.) Elementary student teachers must be available the entire school day during one semester of the junior year and the entire school day during one semester of the senior year. 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.

10. Arranged his personal schedule in order to be available to start an assignment in the fall when public school students report for the start of school (usually late in August or early September). When applying for student teaching assignments in the spring, students should carefully check starting dates with an adviser.

11. Filed application for degree in the office of the dean of the college.

Special Requirements for Secondary Student Teachers:

1. Must have submitted recommendations from three faculty members indicating that the student is believed ready for student teaching.
2. Must have completed a major portion of work in his teaching major and minor.
3. Must have 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 Elementary Student Teachers:

1. Must have completed at least one semester or summer session in residence study. Those not in the regular modular program must have completed at least one course in the Department of Elementary Education.
2. Attained at least a 2.2 grade-point average overall prior to entering the Junior Module courses; attained at least a 2.5 grade-point average in all Junior Module courses prior to entering the Senior Module.
3. Students enrolled in the Junior and Senior Modules may not follow the regular University Academic Calendar. These are considered professional semesters and the student may be required to comply with a modified Academic Calendar.

ELEMENTARY EDUCATION. The modular program in elementary education combines student teaching, methods courses, and foundations courses in a single

time unit consisting of full days during one semester of the junior year and one semester of the senior year. The courses that are included in these modules are clearly indicated in the curriculum for Elementary Education. Students enrolled in elementary student teaching will receive a grade of CR (credit is awarded) or NC (no credit is awarded) in the course **El Ed 400,** Student Teaching. The hours for this course are not computed in the scholarship index. The methods courses in the modules will be graded with the usual A,B,C,D, or F grades.

A $10.00 laboratory fee is charged each student enrolled in the Junior Methods Module and the Senior Internship Module.

Students are responsible for planning their programs so that the junior module is taken during the junior year and the senior module is taken during the senior year. In some instances where program scheduling difficulties are evident, students may be permitted to take both modules during the senior year. In these special instances the student must petition the director of student teaching no later than the first semester of the junior year to have the request considered.

Most of the students will be assigned to schools that have been designated as student teaching centers. In these centers a student teacher is placed with each classroom teacher in the building, thus as many as 15-20 student teachers are scheduled in each center.

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.

Special Facilities Located in the College of Education

LEARNING MATERIALS CENTER. The Learning Materials Center serves the educational needs of students, teachers, and faculty members by providing a comprehensive collection of materials and media to be used in the teaching-learning process. The library collection includes textbooks, courses of study, curriculum guides, resource units, films and filmstrips, tapes and other teaching materials. The center also provides an audio-visual laboratory equipped with the latest media materials and equipment. A production center is available for the design and production of all forms of graphic materials.

MANZANITA CENTER. Manzanita Center is a laboratory where both undergraduate and graduate students may, under supervision, observe and participate with children and youth in a variety of educational activities. The College's nursery and kindergarten groups are housed here. Also available for research and study purposes are other special groups of children, as well as selected individual children and youth who have been referred to this Center for diagnosis of educational deficiencies and for remedial services.

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, located in the Carlisle Gymnasium and administered by the Department of Physical Education, specializes in environmental and exercise physiological research and provides opportunities for qualified students and faculty to conduct scientific investigations in areas related to hyper- and hypobaria, metabolism, exercise capacity, muscular strength, reaction time, anthropometry, and fat free body weight.

THERAPEUTIC PHYSICAL EDUCATION LABORATORY. This laboratory encompasses some 4000 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.

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.

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 Arts 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 degree check during the first semester of enrollment in the College of Education. Application can be obtained from the 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 towards any bachelor's degree. (See course 429 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.

4. Completion of 40 semester hours in courses numbered 300 or above.

5. For minimum residence requirements, see p. 164.

6. Completion of the prescribed curriculum which leads to the desired degree (see CURRICULA, pp. 211-230). **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.

NOTE: Students who plan to teach in the secondary schools must complete a teaching major or 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. 214-216.

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 each UNM student expecting to get a degree from the college include in his preparation program a minimum of 48 semester hours of general education. In general, the group requirements as currently listed for the College of Arts and Sciences and for the College of Fine Arts will satisfy the general education requirements for those expecting to teach, but there are some minor exceptions which will be explained by the Dean of the College of Education. The College of Education requires **all** its graduates to complete the general education requirements as follows. Minimum requirements in items numbered 1 to 5 below must be met; 6 and 7 are optional, but a total of 48 semester hours is required.

REQUIRED AREAS:	Semester hours
1. **Humanities and Social Science.** The following fields are accepted in this area: anthropology, economics, geography, history, literature, philosophy, political science, and sociology. At least one course in literature (including writing, linguistics, literature from all countries, and foreign language literature courses) and work in two other areas are required.	9-15
2. **Behavioral Science.** A course in general psychology is required.	3-6
3. **Biological and/or Physical Science.** At least 8 hours in laboratory sciences, including 2 separate labs, are required. Work acceptable for meeting this requirement is offered in the following departments: astronomy, biology, chemistry, geology, engineering, or physics.	8-12

4.	**Communication Arts.** Engl 101 and 102 and Sp Com 256* are required. (If Engl 101 has been waived a minimum of 6 hours is required).	6-15
5.	**Fine and Practical Arts.** Work in art, art education, industrial education, music, architecture, music education, creative dance, theatre art, business education, and home economics may be taken to meet this requirement. At least one course in history or appreciation (e.g., of music, art, or of architecture) is required.	6-12

OPTIONAL AREAS:

6.	**Mathematics.**	3-6
7.	**Foreign Language.** Two semesters of a language are required if this area is represented.	6
8.	**Physical Education.** (non-professional)	1-8
	Total required	48 sem. hrs.

NROTC students may substitute certain naval science courses in several of the curricula when approved by the appropriate department chairman.

PROFESSIONAL EDUCATION REQUIREMENTS

Most 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) every student must take other professional education courses as prescribed in the curriculum he is following. A minimum of 24 semester hours in professional education is required.

CURRICULA

Curricula are outlined on the following pages under the respective departments for the purpose of directing students in their chosen fields of work. Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction."

ART EDUCATION

MAJOR STUDY (TEACHER CERTIFICATION FOR ART AND PROVISIONAL SECONDARY CERTIFICATES)

A student may enroll in either the College of Education or the College of Fine Arts and satisfy requirements for teacher certification at the secondary level.

The candidate for the B.A. in Education must complete at least 40 semester hours in courses numbered 300 or above.

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* Or approved substitute.

There are two curricula that prepare the student to teach art in the public schools in New Mexico. The curriculum outlined in detail below qualifies students to apply for a special certificate endorsed for the teaching of art in grades K-12. *In the case of these students requiring K-12 certification in Art Education, no minor* is required, but the student must complete the required 50 hours in subject matter specialization and 24 hours of professional education.

K-12 CURRICULUM

First Semester		Second Semester	
Freshman Year			
Engl 101 Wrtg w/Rdgs in Exp	3	Engl 102 Wrtg w/Rdgs in Lit	3
*Hum & Soc Sci	3	*Hum & Soc Sci	3
*Biol & Phy Sc	4	*Biol & Phy Sc	4
Art 123 Studio Fundamentals	6	Art Elective—200 level	3
		Art 130 Contemp Art	3
	16		16
Sophomore Year			
Engl (Lit)	3	Sp Com 256 or TA 101	3
Art Ed 220 Pre-Tchg Exp in Art	3	Ed Fdn 290 Fdns of Ed	3
†Gen Elect	6	Psych 101 or 102 Gen	3
Art Ed 210 Creat Art in Sec Sch	3	Art Ed 211 Creat Art in K-9	3
Art Hi 270, 271 or 272	3	Art Hi 270, 271, 272	3
	18		15
Junior Year			
Ed Fdn 300 Hum Grwth & Dev	3	Ed Fdn 310 Learn & Classrm	3
Art Ed 400 Student Tchg-Elem	3	Gen Elect	6
Art Ed 402 Children & Art	3	Art Studio	6
Art Studio	6	Art Elect (above 300)	3
Art Electives	2		
	17		18
Senior Year			
Ed Elect (above 300)	3	‡Art Ed 461 Student Tchg-Sec	6
Art Elect (above 300)	6	Art Ed 434 Tchg Art in Sec Sch	3
Gen Elect	6	Gen Elect	4
	15		13

CURRICULUM FOR SECONDARY TEACHERS

The second curriculum prepares the student to teach art and a second subject area in grades 7-12. Completion of a departmental minor is required and may be selected from the approved list shown on p. 226. "Electives" in K-12 curriculum may be used to meet minor requirements for secondary teachers. Also, students selecting this curriculum will substitute general courses above 300 for Art Ed 400 and 401 in curriculum above. These are the only differences in the curricula.

The successful completion of this curriculum entitles the graduate to apply for the special Professional Secondary Certificate endorsed for the teaching of art and the minor subject by the New Mexico State Department of Education.

MINOR STUDY IN ART EDUCATION

Elementary Education students only: Art 123, 130, and Art elective (200 level), and 130; Art Ed 110, 115, 220, and 401.

* Choose from General Education requirements listed on pp. 210-211.

† Students enrolled in the College of Fine Arts must meet group requirements listed on pp. 248-250. This curriculum includes all but 3 hours, which should be taken at this time.

‡ Student teaching may be divided between 2 semesters of the senior year.

BUSINESS EDUCATION

COMPREHENSIVE CURRICULUM INCLUDING VOCATIONAL OFFICE EDUCATION

(Leading to the degree of Bachelor of Science in Education)

Freshman Year		Sophomore Year	
Engl 101 Wrtng w/Rdgs in Expos	3	Engl (Lit)	3
Engl 102 Wrtng w/Rdgs in Lit	3	Sp Com 256 Communication for Tchrs	3
*Laboratory Science	8	Ed Fdn 290 Founda of Ed	3
**Math elective	3	Econ 200, 201 Prin and Probs; Prin	6
***Bus Ed 112 Interm Typ	3	**Accounting	6
Bus Ed 262 Adv Typ	3	**Data Processing	3
Bus Ed 117 Office Mach & Filing	2	***Bus Ed 113 Shorthand Theory	3
Psych 102 Gen Psych II	3	***Bus Ed 114 Shorthand Dictation	3
Gen Elect or Minor	3	Bus Ed 201 Intro to Data Process for Bus Ed	3
	31		33

Junior Year		Senior Year	
Ed Fdn 300 Hum Grwth & Dev	3	Fine or Prac Arts (not Bus Ed)	3
Ed Fdn 310 Learn & Classroom	3	*Soc Sci	3
B&AS 306, 307 Man, Society, and Law; Law of Contracts	6	Bus Ed 463 Stu Tchg	15
Bus Ed 253 Shorthand Transcription	3	Gen Elect or Minor	9
Bus Ed 257 Secl Admin	3		
Bus Ed 265 Bus Comm	3		
Bus Ed Requirement	3		
Bus Ed 350 Voc Off Lab	3		
Gen Elect or Minor	6		
	33		30

GENERAL BUSINESS CURRICULUM

(Leading to the degree of Bachelor of Science in Education)

Freshman Year		Sophomore Year	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl (Lit)	3
Engl 102 Wrtg w/Rdgs in Lit	3	Sp Com 256 Communication for Tchrs	3
*Laboratory Science	8	Econ 200, 201 Prin & Probs; Prin	6
**Math elective	3	Ed Fdn 290 Founda of Ed	3
***Bus Ed 112 Interm Typ	3	**Accounting	6
Bus Ed 262 Adv Typ	3	Business Elective	3
Psych 102 Gen Psych II	3	Bus Ed 201 Intro to Data Proc for Bus Ed	3
Gen Elect or Minor	3	**Data Processing	3
		Gen Elect or Minor	3
	29		33

Junior Year		Senior Year	
Ed Fdn 300 Hum Grwth & Dev	3	Fine or Prac Arts (Not Bus Ed)	3
Ed Fdn 310 Learn & Classroom	3	*Soc Sci	3
B&AS 307, Law of Contracts	3	Bus Ed 463 Student Tchg	15
Bus Ed 265 Business Communic	3	Major Electives	3
B&AS 330 Org Theory	3	Gen Elect or Minor	9
Major Electives	9		
Gen Elect or Minor	6		
Bus Ed 350 Voc Off Lab or Business Elective	3		
	33		33

Majors in any Business Education Curriculum must earn a minor of 18 hours outside the field of business.

* Choose from General Education requirements on pp. 210-211.

** See Bus Ed adviser.

*** May be waived if student has had typewriting or shorthand in high school.

MINOR STUDY IN BUSINESS EDUCATION (Comprehensive)

Bus Ed 253 and 262 and 15 additional hours in Business Education, Economics, and Business and Administrative Sciences courses.

MINOR STUDY IN BUSINESS EDUCATION (General Business)

**Accounting and 15 additional hours in courses in Business Education, Economics, and Business and Administrative Sciences courses.

GRADUATE COURSES

See course listings under Education, Secondary. See Department Chairman for course of study.

EDUCATIONAL ADMINISTRATION

See pp. 346-348 for course descriptions and the **Graduate School Bulletin** for all graduate programs.

EDUCATIONAL FOUNDATIONS

See pp. 348-350 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 teachers are required to complete a minimum of 55 semester hours in general education. The following minimums apply for persons pursuing a degree in elementary education.

1. Humanities and Social Science, 9 semester hours
2. Behavioral Sciences, 6 semester hours
3. Science, 8 semester hours
4. Communicative Arts, 9 semester hours
5. Fine and Practical Arts, 10 semester hours
6. Mathematics, 6 semester hours
7. Health, P.E. and Recreation, 7 semester hours

Selected courses currently listed for the College of Arts and Sciences, the the College of Fine Arts and for the College of Education will satisfy the general education requirements. The student pursuing a degree in elementary education should contact the Department of Elementary Education for an approved list of suggested courses that satisfy these requirements.

All prospective elementary teachers are required to complete a minimum of 38 semester hours of prescribed courses in professional education. The following professional education courses are required:

Pre-Module, 7 semester hours	**Semester Hours**
Ed Fdn 290 Founda of Ed	3
El Ed 319 PE in El Sch	2
El Ed 441 Child Lit	2

** See Bus Ed adviser.

Junior Methods Module, 19 semester hours*	
Ed Fdn 300 Hum Grwth & Dev	3
Ed Fdn 310 Learn & Classrm	3
El Ed 321L Tchg of Soc Studies in El Sch	3
El Ed 331L Tchg of Reading in El Sch	3
El Ed 333L Tchg Oral Writ Lang in El Sch	2
El Ed 353L Tchg of Science in El Sch	3
El Ed 361L Tchg of Math in El Sch	2
Senior Internship Module, 15 semester hours*	
El Ed 400 Stu Tchg in El Sch	6-15
El Ed 497 Rdg & Res in Honors (for selected interns)	3

MINOR REQUIREMENTS FOR ELEMENTARY EDUCATION MAJORS

Elementary Education majors are required to obtain a minor by completing 24 semester hours in a subject area or a 30 semester hour composite minor 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. Those interested in preparing to teach in special education classrooms will also find the Minor Study in Special Education under Department of Guidance and Special Education in this section; this minor requires 25-28 hours.

Composite minors have been approved in Bilingual Education, Early Childhood Study, Science, and the Social Sciences.

COMPOSITE MINOR IN BILINGUAL EDUCATION. The Department has designated a 30 semester hour composite minor for students wishing to prepare for teaching in bilingual classrooms. The minor is being revised and students interested in this minor should contact the Chairman of the Department for the specific requirements **as early in the students' college careers as possible.**

COMPOSITE MINOR IN EARLY CHILDHOOD STUDY. This is designed for students wishing to prepare for teaching in the pre-school and primary years.

A. Development (12-15 hours)		B. Psychology (6-9 hours)	
H Ec 102L Inf Grwth & Devel	3	Psych 101 Gen Psych I	3
H Ec 408L Child Grwth & Dev	3	Psych 102 Gen Psych II	3
Ed Fdn 300 Human Grwth & Dev	3	Psych 230 Psych of Adjust **or**)	
Com Ds 430 Devel of Spch & Lang	3	Psych 432 Child Clin Psych **or**)	3
Psych 320 Developmental Psych	3	Psych 428 Cognitive Devel)	

C. Early Childhood Education (6 hours)

El Ed 305 Tchg in Kdgn-Prim Yrs	3
El Ed 405 Curr for Early Chld	3

COMPOSITE MINOR IN SCIENCE. This is designed for students wishing to pursue a broad fields 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

*These are the Methods and Internship Teaching modules. The courses in each module are to be taken concurrently and students may not enroll in courses not a part of the module. Students must plan their programs so that Junior and Senior Modules do not fall in the same academic year.

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 fields study of the social sciences. Acceptable fields include anthropology, economics, geography, government, history, and sociology.

The minor must include at least 12 semester hours of study in each of two departments (such as History and Geography) and at least 6 semester 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. For information regarding these certification programs see p. 202.

The Department also offers a graduate program (Master's) in Elementary Education and a joint graduate program (Master's) with the Department of Educational Administration. Students wishing to pursue one of these programs should consult the Chairman of the Department and the **Graduate School Bulletin** for details.

GUIDANCE AND SPECIAL EDUCATION

This department offers work leading to the Master's degree in Counseling and in Special Education. 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, or counseling in business and industry. The Master's degree in Special Education may be pursued with an emphasis in mental retardation, emotional disturbance or learning disabilities. The Doctorate with a concentration in Pupil Personnel Services may emphasize either counseling or special education. Doctoral work in counseling provides emphasis in counselor education, counseling research, counseling psychology, college personnel work, or pupil personnel services. Doctoral work which emphasizes Special Education encompasses all areas of special education listed above. Students wishing to pursue any of these programs should refer to the **Graduate School Bulletin.**

An undergraduate major and minor with emphasis on Mental Retardation is offered in the field of Special Education at both the elementary and secondary levels.

MAJOR STUDY IN SPECIAL EDUCATION

(Leading to the degree of Bachelor of Arts in Education)

Freshman Year

First Semester		Second Semester	
Psych 101 Gen Psych	3	Engl 102 Writ w/Rdgs in Lit	3
Engl 101 Writ w/Rdgs in Expos	3	Hum & Soc Sci	3
Hum & Soc Sci	3	Biol and/or Phys Sci	4
Biol and/or Phys Sci	4	Health, Phys Ed & Rec	1
Health, Phys Ed & Rec	1	Electives (Optional)	6
Elective (Optional)	4		
	15-18		17

Sophomore Year

First Semester		Second Semester	
Spc Ed 250 Intro to	2	Spc Ed 381 Nat & Needs of the Mentally Retarded	3
Hum & Soc Sci	3	Ed Fdn 290 Found of Educ	3
Behavioral Sciences	3	Fine & Prac Arts	3
Communication Arts	3	Mathematics	3
Spc Ed 271 Educ of Except Children	3	Electives (and/or minor)	3-6
Electives (and/or minor)	1-4		
	15-18		15-18

Junior Year

First Semester		Second Semester	
Ed Fdn 300 Hum Growth & Dev	3	Spc Ed 444 Emotionally Handicapped Child	3
Fine & Prac Arts	3	Spc Ed 473 Tchg the Mentally Retarded	3
Spc Ed 440 Soc & Psy Prob	3	Ed Fdn 310 Lrng & the Classroom	3
Spc Ed Electives	3	Spc Ed Electives	3
Electives (and/or minor)	3-6	Electives (and/or minor)	3-6
	15-18		15-18

Senior Year

First Semester		Second Semester	
Spc Ed 450 Adap Inst Tech in Spc Ed	6	Spc Ed 383 Ed Problems of the Mex-Am	3
C & I 432 Prod of the Instr Mater for the Classroom	3	Spc Ed 479 Meth & Matls	3
Ed Fdn 474 Eval in Sch Curr	3	Spc Ed 400 or 462 Student Tchg in Spc Ed	6
Spc Ed Elective	3		
	15		12

MINOR STUDY IN SPECIAL EDUCATION

Spc Ed 250 Intro to Spec Ed	2	Spc Ed 479 Meth & Matls	3
Spc Ed 271 Educ of Except Children	3	Spc Ed 473 Tchg the Mentally Retarded	3
Spc Ed 381 Nat & Needs of Mentally Retarded	3	Spc Ed 462 Stu Tchg-Sec or 400 Stu Tchg-Elem	6
Spc Ed 440 Soc & Psych Probs	3		
Spc Ed 450 Adap Inst Tech in Ed	6		
			29

HEALTH, PHYSICAL EDUCATION & RECREATION

MAJOR STUDY IN PHYSICAL EDUCATION FOR MEN

(Leading to the degree of Bachelor of Science in Physical Education) A minor is required. Possible minors are: Health, Biology, Science, Social Science, Early Childhood Study, Bilingual Education, Special Education, Recreation.

Freshman Year

First Semester		Second Semester	
Engl 101 Writ w/Rdgs in Expos	3	Engl 102 Writ w/Rdgs in Lit	3
Biol 110L or 121L Prin of	4	F A Elective—Hist or Apprec	3
F A Electives	3	§Psych 102 General II	3
Hum & Soc Sc	3	Hum & Soc Sci	3
P E 160 Phys Fitness Prog	2	P E 210 Folk Dancing	1
P E Activity	1	P E 163 Swimming	2
		P E Activity	1
	16		16

Sophomore Year

First Semester		Second Semester	
P E 201 Gymnastics	2	Sp Com 256 Communication for Tchrs	3
Hum & Soc Sci—Eng Lit	3	Ed Fdn 290 Found of Educ	3
P E 319 PE in Elem Sch	2	P E 203 Tchg Wrestling	2
Biol 136 Hum Anat & Physiol	3	Electives, P E	2
Biol 139L Hum Anat & Physiol Lab	2	Electives	5
P E 398 Prin P E	3	P E Activity	1
P E Activity	1		
	16		16

Junior Year

First Semester		Second Semester	
Biol 326L Physiol of Exercise	3	P E 397 Kinesiology	4
P E 301 Tchg of Sports	2	P E 302 Tchg of Sports	2
P E 444 Tchg of P E	3	P E 373 Treat of Ath Injuries	2
Ed Fdn 300 Hum Growth & Dev	3	P E 399 Org & Adm of P E	3
Ed Fdn 310 Lrng & the Classroom	3	P E Electives	2
Electives	2	Electives	3
P E Activity	1	P E Activity	1
	17		17

Senior Year

First Semester		Second Semester	
P E 400-461-462 Stu Tchg	3-6	P E 400-461-462 Stu Tchg	3-6
P E 452 Org of Sports Prog	3	P E 489 Tests & Meas P E	3
P E 466 Special P E	3	Electives	6
P E Electives	2	P E Activity	1
Electives	3		
P E Activity	1		
	15-18		13-16

MINOR STUDY IN ATHLETIC COACHING FOR MEN (Not for Physical Ed Majors)

PE 203 Tchg of Wrestling	2	PE 161 Fund of Bsktball	2
PE 162 Fund of Football	2	PE 202 Th & Prac of Baseball	2
PE 373 Treat of Ath Injuries	2	PE 397 Kinesiology	4
PE 398 Prin of	3	PE 452 Org of Sports Progs	3
Biol 136 Hum Anat & Physiology	3	PE 204 Th & Prac of Tr & Fld	2
Biol 139L Hum Anat & Physiol Lab	2		
PE 160 Phys Fitness Prog	2		29

MINOR STUDY IN PHYSICAL EDUCATION FOR MEN

PE 163 Swimming	2	PE 210 Folk Dance	1
PE 201 Gymnastics	2	PE 301 Teaching of Sports	2
PE 160 Phys Fitness Prog	2	PE 399 Org & Adm of	3
PE 203 Tchg of Wrestling	2	PE 397 Kinesiology	4
Biol 136-139L Hum Anat & Physiol, Lab	5	PE 398 Prin of	3
			26

MAJOR STUDY IN PHYSICAL EDUCATION FOR WOMEN

(Leading to a degree of Bachelor of Science in Physical Education.)

Freshman Year

First Semester		Second Semester	
Engl 101 Writ w/Rdgs in Expos	3	Engl 102 Writ w/Rdgs in Lit	3
Biol 110 or 121L Prin of	3-4	PE 210 Folk Dance	1
PE 151 Body Mech & Self-Test Activ	1	PE 211 Indiv & Dual Sports	1
PE 152 Team Sports	1	FA Electives	3
FA Electives	3	§Psych 102 General II	3
Hum & Soc Sci	3	Hum & Soc Sci	3
PE 115 Gymnastics	1	PE 345 Prof Lab Exp in	1
		PE 109 Begin Contemp Dance	1
	15-16		16

§ Second Semester only.

Sophomore Year

First Semester		Second Semester	
PE 345 Prof Lab Exper	1	Sp Com 256 Communication for Tchrs	3
Hum & Soc Sci (Lit)	3	Ed Fdn 290 Found of Educ	3
PE 319 PE in Elem Sch	2	PE 345 Prof Lab Exper	1
Biol 136 Hum Anat & Physiology	3	Biol 326L Physiol of Exercise	3
Biol 139L Hum Anat & Physiol Lab	2	Electives	5
PE 398 Prin of PE	3	PE 142 Track & Field	1
PE 104 Lifesaving	1		
	15		16

Junior Year

First Semester		Second Semester	
PE 360 Officiating in Sports or 366 Tchg of Contemp Dance	2	PE 345 (Junior Block)	2
PE 309 Aquatics & Gymnastics	2	PE 307 Team Sports in Sec Sch	2
PE 310 Folk Dance in Sch Prog	2	PE 308 Indiv & Dual Sports in Sec Sch	2
Ed Fdn 300 Hum Growth & Dev	3	PE 399 Org & Adm of PE	3
Ed Fdn 310 Lrng & the Classroom	3	PE 397 Kinesiology	4
PE 444 Tchg of PE	3	Electives	3
PE Activity	1	PE Activity	1
	16		17

Senior Year

First Semester		Second Semester	
øP E 400 Stu Tchg Elem Sch	3	P E 461-462 Stu Tchg Sec Sch	6
P E 452 Org of Sports Prog	3	P E 489 Tests & Meas in P E	3
P E 466 Special P E	3	Electives	6
Electives	6	P E Activity	1
P E Activity	1		
	16		16

MINOR STUDY IN PHYSICAL EDUCATION FOR WOMEN

PE 152, 210, 211	3	PE 452 Org of Sports Progs	3
H Ed 164 First Aid	2	PE 398 Prin of	3
PE 345 Prof Lab Exp in PE	2	PE 399 Org & Ad of PE	3
PE 307, 310, 444, or PE 308, 309, or 345 (Jr. Bl.)	6-7	PE Activities	4
			26-27

ATHLETIC TRAINING OPTION
(LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICAL EDUCATION)

Freshman Year

First Semester		Second Semester	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Biol 121L Principles of Biology	4	Biol 122L Principles of Biology	4
Social Science Elective	3	Social Science Elective	3
PE 160 Physical Fitness Programs	2	PE 162 Fundamentals of Football	2
PE 161 Fundamentals of Basketball	2	PE 163 Swimming	2
PE Elective	2	PE Elective	3
PE 117 Individual Tumbling	1	PE Activity Elective	1
	17		18

Sophomore Year

First Semester		Second Semester	
Chem 101L General Chemistry	4	Chem 102L General Chemistry	4
Engl Lit Elective	3	Biol 136/139L Human Anatomy & Physiology with Lab	5
Sp Com 255 Public Speaking	3	PE Elective	3
Biol 371L Invertebrate Zoology	4	H Ed 171 Personal & Community Health	3
PE Elective	2	Ed Fdn 290 Foundations of Education	3
PE 201 Gymnastics	2	PE Activity Elective	1
	18		19

ø Option for K-12 certificate.

Junior Year

First Semester		Second Semester	
Psych General Elective	3	Biol 421L Comparative Vertebrate Anatomy	5
Physcs 151 General Physics	3	PE Elective	2
Ed Fdn 300 Human Growth & Development	3	PE 397 Kinesiology	4
Biol 326L Physiology of Exercise	3	Physcs 152 General Physics	3
PE 398 Principles of Physical Education	3	H Ec 325 Nutrition	3
PE 466 Special Phys Educ	3	PE Activity Elective	1
	18		18

Junior Year Summer

Ed Fdn 310 Learning & the Classroom	3	Fine Arts Elective (Appreciation or History of Art, etc.)	3
			6

Senior Year

First Semester		Second Semester	
PE Elective	3	Sec Ed 461 Student Teaching	3
PE 489 Test & Measurements in PE	3	PE 494 Clinical Progs for Corrective Therapy	3
PE 494 Clinical Progs for Corrective Therapy	3	Fine Arts Elective	3
Sec Ed 461 Student Teaching	3		
	12		9

Total Hours 135

MAJOR STUDY IN HEALTH EDUCATION

(Leading to the degree of Bachelor of Science in Health Education)

Freshman Year

First Semester		Second Semester	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Biol 121L Prin of Biol	4	Biol 122L Prin of Biol	4
Chem 141L Elem of Gen Chem	4	Chem 281 Integrated Org Chem & Biochem	4
H Ed 164 First Aid	2	Psych 101 Gen Psych I	3
H Ed 171 Pers & Comm Health	3	Elective	2
PE Activity	1	PE Activity	1
	17		17

Sophomore Year

Biol 136-139L Hum Anat & Phys & Lab	5	Biol 233L Paramedical Microbiology	4
Anth 102 Dev of Culture	3	Ed Fdn 290 Found of Educ	3
Soc 101 Intro to	3	Sp Com 256 Communication for Tchrs	3
Psych 102 Gen Psy II	3	Fine Arts Elective	3
H Ed 345 Prof Lab Exper in H Ed	2	Engl (Lit)	3
PE Activity	1	PE Activity	1
	17		17

Junior Year

Ed Fdn 300 Hum Grwth & Dev	3	Ed Fdn 310 Learn & Classrm	3
Electives	1	H Ed 469 Elem Sch Hlth & H Ed	3
H Ed 470 Sec Sch Hlth & H Ed	3	H Ed 301 Gen Safety Educ	3
H Ec 125 Food for Man	3	øH Ed 312 Fund Hum Sex & Sex Ed	3
Soc Elective	3	H Ed 345 Prof Lab Exper in H Ed	2
Nurs 352 Fund of Commun Hlth Nurs	2	Electives	3
	15		17

ø Limited to juniors and seniors only.

Senior Year

First Semester		Second Semester	
C&I 432 Prod of Instr Material for Classroom	3	H Ed 461 Stu Tchg Sec Sch	6
Guid 431 Theories of Human Interaction	2	Electives	8
Electives	2		
H Ed 400 Stu Tchg Elem Sch	6		
	14		14

MINOR STUDY IN HEALTH EDUCATION

H Ed 164 First Aid	2	Guid 431 Theories of Human Interaction	3
H Ed 171 Pers & Comm Hlth	3	Electives (to be selected in consultation with H Ed adviser)	4
øH Ed 312 Fund of Hum Sex & Sex Ed	3	H Ed 301 Gen Safety Educ	3
H Ec 125 Food for Man	3		24

MAJOR STUDY IN RECREATION

(Leading to the degree of Bachelor of Arts in Recreation)

Freshman Year

First Semester		Second Semester	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Nat Sci	4	Nat Sci	4
Recrea 175 Found of Recrea	3	Fine or Pract Art	2–3
Music 295 Music in Recrea	2	Psych 102 Gen Psychology II	3
Math 101 Math, Surv of the Art	3	H Ed 171 Pers & Comm Hlth	3
	15		15–16

Sophomore Year

First Semester		Second Semester	
Engl Lit	3	Sp Com 256 Communication for Tchrs	3
Recrea 290 Creat & Soc Arts for Recrea	3	Journ 251 News Wrtg & Report or Bus Ed 265 Business Commun	3
H Ed 164 First Aid	2	Recrea Program Option	3
Soc Sci Elective	6	Psych 230 Psych of Adjustment or Psych 270 Interpersonal Relations	3
Directed Recrea Elective	3	Soc Sci Elective	3
		Recrea 378 Outdoor Recreation	3
	17		18

Junior Year

First Semester		Second Semester	
Recrea 301 Recrea Sports	2	Ed Fdn 300 Hum Growth & Dev	3
Recrea 321 Recrea Leadership	3	Psych 371 Social Psych	3
Recrea Program Options	6	Soc Sci Elective	3
Fine or Practical Arts Elective	3	Recrea 345 Prof Lab Exper	3
Directed Recrea Elective	3	Recrea Program Option	3
		Electives	2
	17		17

Senior Year

First Semester		Second Semester	
Recrea 475 or 476 Fld Work in Recrea	3	Recrea 475 or 476 Fld Work in Recrea	3
Recrea 454 Dev of Recrea Programs	3	Recrea 480 Admin of Recrea Progs	3
Core Elective	3	Core Elective	2
Electives	6	Electives	6
	15		14

ø Limited to juniors and seniors only.

MINOR STUDY IN RECREATION

Recrea 175 Fdns of Recrea	3	Recrea 454 Dev of Recrea Progs	3
Recrea 290 Creat & Soc Arts for Recrea	2	Directed Electives	11
Recrea 301 or 302 Recrea Spts	2		
Recrea 321 Recrea Leadership	3		24

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 junior and senior high schools, for Home Economics Extension work, Home Economics in social services, and for a career in Home Economics in business. The curriculum is approved by the State Department of Vocational Education for positions in the federally-aided schools of the State.

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. Students completing the program will qualify for a 4-year provisional vocational home economics certificate or a 4-year provisional certificate in New Mexico.

HOME ECONOMICS EDUCATION

Freshman Year		Sophomore Year	
Anth 102 Dev of Culture	3	Area I or II Elective	6
Fine Art History or Appreciation requirement	3	Econ 201 Principles of Econ	3
Engl 101 Wrtg w/Rdgs in Expos	3	Science Elective	4
Engl 102 Wrtg w/Rdgs in Lit	3	Sp Com 256	3
Psych 101 or 102 Gen Psych I, II	3	Art Ed 130 Tech of Design Ed (fall)	3
Science Elective	4	Ed Fdn 290 Founda of Ed	3
Soc 101 Intro	3	H Ec 125 Food for Man (fall)	3
H Ec 101 Freshman Seminar (fall)	2	H Ec 250 Clothing & Human Behavior (spring)	2
H Ec 102 Infant Growth & Dev	3	H Ec 252 Textiles	3
H Ec 120 Food Science	3	Elective	3
H Ec 150L Clothing Const	2		
	32		33

Junior Year		Senior Year	
Area I or II Elective	3	Area I or II Elective	3
Econ 330 Consumer Econ	3	H Ec 408 Child Growth & Devel	2–3
Literature Elective	3	H Ec 418 Family Relationships	3
Ed Fdn 300 Hum Growth & Devel	3	H Ec 444 Family Finance (spring)	3
Ed Fdn 310 Learning & Classroom	3	H Ec 445 Home Management Resid	4
H Ec 341 House & Its Furnishings (fall)	3	H Ec Ed 461 Student Teaching in Sec Sch	6
H Ec 443 Home Management (fall)	3	H Ec Ed 465 H Ec Seminar	1–2
H Ec Ed 437 Tchg of H Ec (spring)	3	Elective	6
H Ec Ed 361 Pre Stu Tchg in Sec Ed (spring)	3		
Elective	6		
	33		28–30

12 hours selected from
Area I—Soc 211, 215, 216, 225, 301-302, 313, 411, 416, Anth 101.
Area II—Psych 230, 260, 270, 320, 331, 332, 371, 414, 428.
At least 3 hours in an area, 3 hours 300 level or above.

CURRICULUM FOR STUDENTS PREPARING TO BE DIETITIANS

Completion of this program qualifies a student for an internship approved by the American Dietetic Association.

DIETETIC MAJOR

Freshman Year		Sophomore Year	
Chem 141L Elem of Gen Chem	4	Anth 102 Dev of Culture	3
Biol 136 Human Anatomy & Phys	3	Fine Art Appreciation or History Requirement	3
Engl 101 Wrtg w/Rdgs in Expos	3	Biol 121L Principles of Biol	4
Engl 102 Wrtg w/Rdgs in Lit	3	Chem 281L Int Org Chem & Biochem	4
Soc 101 Intro	3	Econ 201 Principles	3
H Ec 101 Freshman Seminar (fall)	2	Psych 101 General Psych I	3
H Ec 102 Infant Growth & Dev	3	Psych 102 General Psych II	3
H Ec 120L Food Science	3	Soc Elective	3
H Ec 125 Food for Man (fall)	3	Speech Communication	3
H Ec 222L Meal Management	3	H Ec 252 Textiles	3
Elective	3		
	33		32
Junior Year		**Senior Year**	
B&AS 202 Intro to Acct	3	B&AS 330 Organization Theory	3
Biol 233L Paramedical Microbiol (fall)	4	Econ 330 Consumer Econ	3
Psych 230 Psych of Adj	3	Literature Elective	3
Ed Fdn 310 Learn & Classroom	3	*Prof Ed Elective	3
H Ec 325 Nutrition	3	H Ec 418 Family Relationships	3
H Ec 326L Nutrition Lab	1	H Ec 427L Large Quantity Food Prod	3
H Ec 341 House & Its Furnishings (fall)	3	H Ec 428 Diet Therapy	3
H Ec 408 Child Growth & Devel	2–3	H Ec 434 Organization & Mgt	3
H Ec 431 Experimental Foods	3	H Ec 443 Home Management (fall)	3
Electives	6	Electives	4
	31–32		31

CURRICULUM FOR STUDENTS WISHING A DOUBLE MAJOR IN HOME ECONOMICS AND DIETETICS

For a combined major in Home Economics Education and Dietetics, the student takes all courses under "Curriculum for Students Preparing to Teach Home Economics." In addition, the following are required: H Ec 325, 326L, 427L, 428, 431L, 434; Biol 121L, 233L, 136; Chem 141L, 281; B&AS 202, 496 or Psych 413. This program qualifies the individual for an internship and a teaching certificate.

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 4 areas:

1. H Ec 120L, 125, 222L, 325, 326L
2. H Ec 150L, 250, 252, 254L, 456L
3. H Ec 101, 102, 408L, 418
4. H Ec 341, 443, 444, 445L.

Ten additional hours approved by the student's adviser. Twelve of the 34 hours must be upper division.

* Approved by adviser.

INDUSTRIAL EDUCATION

CURRICULUM FOR STUDENTS PREPARING TO TEACH INDUSTRIAL EDUCATION

Leading to the degree of Bachelor of Science in Industrial Education)

Freshman Year		Sophomore Year	
Engl 101 Wrtg w/Rdgs in Expos	3	Literature Elective	3
Engl 102 Wrtg w/Rdgs in Lit	3	Sp Com 256 Communication for Tchrs	3
øSoc Sci	6	øScience & Lab	4
Psych 101 Gen Psych I	3	Ed Fdn 290 Founda of Ed	3
I Ed 101 Shop Computation	3	I Ed 225 Design in I A	3
I Ed 105 Intro to I Ed	2	I Ed 230L Power Mechanics	3
I Ed 110L Machine Woodworking	3	I Ed 261L Drafting III	3
I Ed 111L Drafting I	3	I Ed 262L Drafting IV	3
I Ed 112L Drafting II	3	I Ed 265L Finishing & Maint	3
I Ed 120L Machine Metalworking	3	I Ed 280L Elect & Electronics I	3
Fine Arts Elective	3	I Ed 285L Welding	3
		Elective	4
	35		38

Junior Year		Senior Year	
Ed Fdn 300 Hum Grwth & Dev	3	I Ed 466 Theory & Org of	3
Ed Fdn 310 Learn & Classrm	3	Educ Elect (over 300)	3
*Science & Lab	4	Sec Ed 433 Tchg of Ind Subj	3
*Soc Sci	6	I Ed 470L Carpentry	3
I Ed 315L Pat Mkg & Foundry	3	I Ed 461 Student Tchg in Sec Sch	6
I Ed 335L Int Power Mechanics	3	Elective	7
I Ed 350L Cabinet Making	3		
I Ed 365L Adv Machine Metalworking	3		
I Ed 380L Elect & Electronics II	3		
I Ed 386L Metal Fabrication	3		
	34		25

MUSIC EDUCATION

NASM MEMBERSHIP

The University of New Mexico is a member of the National Association of Schools of Music. The 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 (133 hours) See pp. 253-254.

(Leading to the degree of Bachelor of Music Education)

MUSIC EDUCATION
(8-semester plan)

Semester I		Semester II	
Psych 101	3	Engl 101	3
Music Theory I	2	Music Theory II	2
Eartraining I	2	Eartraining II	2
Social Science	3	Social Science	3
Mus Ed 194	1	Sp Com 256	3
Applied music	3	Applied music	3
Ensemble	1	Ensemble	1
	15		17

* Approved by adviser.
ø Choose from General Education requirements listed on pp. 210-211.

Semester III		Semester IV	
Mus Ed 294	2	Mus Ed 444	2
Natural Science	4	Natural Science	4
Music Theory III	2	Humanities elect	3
Eartraining III	2	Music Theory IV	2
Engl 102	3	Eartraining IV	2
Applied music	3	Applied music	3
Ensemble	1	Ensemble	1
	17		17
Semester V		**Semester VI**	
Ed Fdn 290	3	Mus Ed 446	2
Mus Ed 451	3	Ed Fdn 300	3
Music 309	2	Music 310	2
§Music 261	3	Mus Ed 366	2
Music 363	2	§Music 262	3
Applied Music	3	Applied music	3
Ensemble	1	Ensemble	1
	17		16
Semester VII		**Semester VIII**	
English Lit elect	3	Mus Ed 461	3
Music 453	2	Music Theory elect	2
Stu Tchg 400	3	Music 364 (365)	2
Fine Arts elect	3	Fine Arts elect	3
Mus Ed 313	2	Applied music	2
Applied music	2	Ensemble	1
Ensemble	1		
	16		13

All students pursuing the curriculum listed above are also subject to all requirements pertaining to Music Education listed on pp. 253-254.

MINOR IN MUSIC EDUCATION

Required:		Plus a minimum of 10 hours in which each of the following areas must be represented:
Mus Theory	2	Mus Hist or Apprec
Ear-Training	2	Mus Ed
Appl Music, piano	4	Music or Mus Ed Elective
Appl Music voice (or another instr)	2	
Ensemble	2	

PHYSICAL EDUCATION

See Health, Physical Education, and Recreation pp. 217-222.

SECONDARY EDUCATION

STATEMENT OF PURPOSE AND OBJECTIVES

The Department of Secondary Education is deeply involved in developing quality educational programs for all young adults. This effort is a cooperative endeavor with the New Mexico State Department of Education and the secondary school districts 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 of Arts in Education degree;
2) the in-service education of secondary and post-secondary school teachers in

§ NOTE: This plan uses a 6-hour survey of music history instead of the 8-hour sequence of four 2-hour courses.

all fields who are interested in pursuing graduate work which will help them develop their skills and competencies and their ability to cope with needed change in curriculum, culminating usually in a Master of Arts degree;

3) a program of educational research in the theory and practice of secondary education led by the 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 undergradaute program of the department is based on a broad general education which the student pursues primarily in his first two years at the University. Its major goal is the student's development of the human values and the qualities of excellence in scholarship and interdisciplinary relationships which will serve as a base for his entrance into the professional education program.

The professional education program involves both the student's pursuit of knowledge in two areas of study in which he proposes to become competent to teach in the secondary schools, and the experiences and course work in the foundations of education, secondary education curriculum and structure, and methods of teaching in the secondary schools. The goal of the department is to continually aid the student in his efforts to integrate the work in all of these areas which must contribute to competency as a teacher.

CERTIFICATION REQUIREMENTS

Successful completion of any of the following programs prepares the graduating senior for application for a four-year, provisional teaching certificate issued by the New Mexico State Department of Education. University departmental approval is given to all students successfully completing the following programs. Non-degree students and students already holding their bachelor's degrees but taking work in Professional Education may or may not be on approved programs. **All** students working towards certification should consult with their advisers in Professional Education if they are interested in meeting certification requirements.

Certification beyond the four-year provisional certificate depends upon additional academic and professional course work. See p. 202 for a description of teaching certificates.

Since it is possible to earn a master's degree in Secondary Education without meeting certain certification requirements related in some instances to undergraduate preparation, graduate students need to consult with their advisers in Professional Education as do undergraduate students. See **Graduate School Bulletin** for further details.

PROGRAMS FOR TEACHERS IN SECONDARY SCHOOLS

The following curricula, leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Education, are designed for students preparing for junior and senior high school teaching. Each student should select one of these curricula no later than four semesters prior to his expected date of graduation. The general conditions under which students may select these curricula are to be found under "Degree Requirements" of the "General Academic Regulations" section of the catalog.

For graduation from the College of Education in Secondary Education 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). These concentrations shall total at least 51 semester hours of credit.

Because degree minors and certain patterns of course work in degree majors do not always meet certification requirements, students should consult with advisers in Professional Education. No minor of less than 24 hours, for example, will suffice for certification.

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 Teaching of English as Second Language. Acceptable as minor concentrations **only** are: Anthropology, Astronomy, Business and Administrative Sciences, Theatre Arts, Economics, Journalism, Latin, Library Science, Philosophy, Portuguese, Special Education, and Teaching of Reading in Secondary School. All teaching minors must include at least 24 semester hours.

Students who wish to elect teaching major and minor concentrations not listed above will consult with the Chairman of the Department of Secondary Education for detailed information and requirements (e.g., Humanities, American Studies, Latin American Studies, etc.).

SPECIAL FIELDS FOR TEACHING

1. Art Education: For details see p. 211.
2. Business Education: For details see p. 213.
3. Home Economics: For details see p. 222.
4. Industrial Education: For details see p. 224.
5. Music Education: For details see p. 224.
6. Physical Education for Men: For details see p. 217.
7. Physical Education for Women: For details see p. 218.
8. Health Education: For details see p. 220.
9. Special Education: For details see p. 216.

GENERAL EDUCATION. The General Education program for students in Secondary Education is the same as that required of other undergraduate students in Education (see pp. 210-211 of this catalog).

DEPARTMENTAL REQUIREMENTS FOR STUDENT TEACHING. Students under jurisdiction of this department must present an over-all grade-point average of at least 2.2 and a grade-point average in a major (teaching) concentration of at least 2.5 at the time of enrollment in student teaching.

PROFESSIONAL EDUCATION	Semester Hours
Ed Fdn 290 Foundations of Education	3
Ed Fdn 300 Human Growth & Development	3
Ed Fdn 310 Learning & The Classroom	3
Sec Ed 361 Pre Stu Tchg Exp in Sec Edu	6
Sec Ed 430-445 Special Methods of Tchg in Sec Schs or approved Educ Substitute	3
†Sec Ed 461, 462, 463 Student Tchg	6
Total Professional Education	24

† See p. 205 for admission requirements. Mus Ed 462 may be included as a second experience in student teaching, with the approval of the adviser.

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.

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 2 courses in United States and 2 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. No minor is required with the general social studies major, but one is strongly recommended.

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), Geog 351, and 20 hours of Geology. The balance of the 54 hours may 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 Anth 307L, Psych 240 and 441. The balance of the 54 hours can be selected from Chemistry, Biology, Physics, or Geology.

COMPOSITE IN COMMUNICATION ARTS IN SECONDARY EDUCATION. The composite major in Communication Arts shall consist of at least 54 hours. At least 24 of these hours must be in English, including one course in each of these areas: critical approaches to literature, linguistics, creative or informative writing, Southwest literature, British literature, American literature, contemporary literature, and one elective course in English. All Communication Arts majors are also required to take

Sec Ed 442 (Teaching Reading in the Secondary Schools). An additional concentration of 18 hours is required in one of these departments: Speech, Theatre Arts, or Journalism. Nine (9) hours of electives should be chosen from the following courses: Sp Com 315, 411; Journ 100, 465, 494. In addition to the 54-hour major, all Communication Arts students are required to pursue the 24-hour professional education program including Sec Ed 430 (Teaching of the Communication Arts). No minor is required with the Communication Arts major, but one is strongly recommended.

PROGRAM IN SECONDARY EDUCATION LEADING TO CERTIFICATION IN TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES

The Department of Secondary Education offers an approved major or minor course of study leading to certification in Teaching of English to Speakers of Other Languages. The general and professional education requirements of the college and the department must be met. Candidates for admission into this program should apply for special screening at the time they apply for admission into the College of Education.

Major: The major shall include 36 hours of interdisciplinary study including course work in each of these areas: foreign language (preferably Spanish or one of the Indian languages), 12 hours; linguistics, contrastic analysis of languages, methods of teaching English to speakers of other languages, English language phonology, cultural anthropology, grammar of English (an upper division course), education in cross-cultural settings, and an elective chosen with the approval of the adviser in the Department of Secondary Education.

Minor: The minor shall include 24 hours of interdisciplinary study including course work in each of these areas: foreign language (preferably Spanish or one of the Indian languages), 6 hours; linguistics, grammar of English (an upper division course), methods in teaching English to speakers of other languages, cultural anthropology, English language phonology, and an elective chosen with approval of the adviser in the Department of Secondary Education.

Broad Field Certification: 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 applicant then augment the major of 36 hours with 21 additional hours in foreign language and English for a total of 57 semester hours; foreign language (preferably Spanish or one of the Indian languages), 12 hours; English, 9 hours including American literature, creative or informative writing (upper division course), speech communication (upper division course).

Professional Education: The student must pursue the professional education program of 24 hours, including appropriate pre-student teaching and student teaching experiences in the application of approaches, methods, and techniques in teaching English to speakers of other languages in the Southwest.

PROGRAM IN TEACHING OF READING IN THE SECONDARY SCHOOLS

Students in the Department of Secondary Education may apply for admission into a minor program leading to certification in the Teaching of Reading in the Secondary Schools. The general and professional education requirements of the

college and the department must be met, and the student must also pursue a program in another major teaching field. Candidates for admission into the minor in the reading program should apply for special screening at the time they apply for admission into the College of Education. The minor in teaching reading in the secondary school will include 24 hours of interdisciplinary course work in each of these areas: Sec Ed 442 (Teaching Reading in the Secondary Schools), psychology of reading, classroom diagnosis of reading, a practicum in the secondary classroom, tests and measures, adolescent psychology, adolescent literature, and linguistics. The professional education program will be designed to provide appropriate pre-student teaching and student teaching experiences in the application of approaches, methods, and techniques in teaching reading in remedial, developmental, and accelerated programs in secondary school settings.

SECONDARY EDUCATION CURRICULUM

Freshman Year		Sophomore Year	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl (Lit)	3
Engl 102 Wrtg w/Rdgs in Lit	3	Speech Communication	3
*Lab Science	8	*Social Science	6
*Social Science	6	Ed Fdn 290 Found of Educ	3
Electives or Major	9	Ed Fdn 300 Hum Grow & Dev	3
Psych 101 General Psychology I	3	§Fine Arts or Practical Arts	6
		Electives, Major or Minor	6
	32		30
Junior Year		**Senior Year**	
Ed Fdn 310 Learn & Classrm	3	Sec Ed 430-445 Tchg of Sec Sch Subj	
Sec Ed 361 Pre-Stu Tchg Exp	6	or Approved Educ Electives	3
Electives, Major or Minor	25	§§Sec Ed 461 Stu Tchg in Sec Sch	6
		Electives, Major or Minor	23
	34		32

* Choose from General Education requirements listed on pp. 210-211.

§ The required 6-12 semester hours in Fine or Practical Arts may be taken during any semester of the first 2 years. One course in history or appreciation must be included.

§§ See p. 205 for admission requirements. Student teaching may be taken during either or both of the semesters in the senior year but must be arranged not later than the spring semester of the junior year.

COLLEGE OF ENGINEERING

THE ENGINEER is a creator and a builder. He directs his imagination, ingenuity, resourcefulness, and intelligence to the economical usage of our natural resources. Few professions offer the individual greater challenge, stimulation, and satisfaction of creative accomplishment. In these days, when breathtaking technological advances are commonplace, the engineer requires ever greater breadth and depth of mathematical and scientific cognition. Of increasing importance is the ability for clear self-expression and a sympathetic appreciation of the social, economic, and human values of the world in which we live. The engineer is not only an interpreter of science and mathematics to the producers of human material needs, but he is also a manager of men, money, materials, and machines in effecting the satisfaction of these needs.

The several curricula of the College of Engineering are designed to give the student suitable education, attitudes, and motivations for his entry into a successful career as a practicing engineer, administrator, researcher, or educator. 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 postgraduate level and work toward the master's or doctor's degree. The student must realize, however, that education does not stop with the completion of college. More truthfully, this is when education really begins. The true professional engineer never stops learning; he is continually broadening his 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 enjoy this status.

In the College of Engineering, the student is afforded an opportunity for scholarly study, laboratory exercise, and research participation. He daily rubs shoulders with engineers nationally recognized in their fields. The University of New Mexico strongly believes that engineering teachers must be competent engineers in their own right, and faculty members are encouraged to participate actively in professional practice and research. This experience keeps the faculty informed on new developments, increases their understanding of subjects taught, and gives the student 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 a Bureau of Engineering Research. For details of the Bureau's purposes and activities, see p. 100.

HIGH SCHOOL PREPARATION

It is important that the high school student who wishes to pursue professional engineering studies at the University of New Mexico orient his subject selection in the proper directions at the earliest possible moment. The student properly prepared will be able to follow the regular pattern of studies without the necessity of making up scholastic deficiencies. Students inadequately prepared in mathe-

matics 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" 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. 235. In addition, each freshman engineering student is advised by a faculty member of the student's major engineering department.

ADMISSION FROM UNIVERSITY COLLEGE

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

1. Completion of 26 semester hours of acceptable 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 2 semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous 2 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

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

COURSES OF STUDY

The College of Engineering offers 4-year programs of study leading to the degrees of Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, and Bachelor of Science in Mechanical Engineering. These 4-year curricula are designed for the student who enters without deficiencies and who is capable of carrying the required scholastic loads indicated under the respective departmental programs. Otherwise, the student should plan on spending more than 8 regular semesters to complete requirements for his degree.

The College of Engineering is a member of the American Society for Engineer-

ing Education. The curricula in Civil, Electrical, and Mechanical Engineering are accredited by the Engineers' Council for Professional Development.

SPECIAL FIELDS

In addition to the major fields of study listed above, it is possible for the student to specialize in some degree by choosing appropriate elective courses within the basic curriculum of his major department. A few of the many possibilities are: Computers, Fuel Processing, Structural Engineering, and Theoretical and Applied Mechanics. All departments make use of the modern, high-speed computers located in the Engineering College and the University of New Mexico Computing Center.

DEGREES IN COMBINATION WITH OTHER COLLEGES

If a student wishes to secure a degree in another college together with his engineering degree, he is urged to seek advice early in his college career from the deans of the colleges concerned. With care in selecting his program of studies, it is possible for a student 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 4 years. However, students may need an extra semester to complete the requirements for both a degree and a commission. The student should consult the department chairman concerned in planning his program.

COOPERATIVE EDUCATION PROGRAM

The College of Engineering offers a Cooperative Education Program for students intending to pursue a program in Civil, Electrical and Computer Science, or Mechanical Engineering. This is a five year curriculum which combines classroom study alternated with a planned program of related engineering work experience in industry. The objective of this program is to provide, to the student, an opportunity to study engineering while simultaneously obtaining practical engineering experience through productive employment. This program gives the student an opportunity to earn a major portion of college expenses.

A student who wishes to take part in the Engineering College's Co-op program will enroll at the University and indicate his (or her) intention to study engineering. During the first semester the student should apply to the Dean of Engineering for co-op status. Students must complete at least one semester of the usual freshman engineering program with at least a "C" average before being assigned to his first work phase. Co-op students will normally go on their first work phase either during the second semester of their freshman year or at the beginning of the summer following the freshman year. Thereafter, the student will alternate between school and work phase. A Co-op assignment cannot be guaranteed.

Prior to leaving the campus for **every** work phase, the co-op student must register for Engr 100 and pay a registration fee of $15.00. This registration maintains the student's academic status. This registration must be completed before

the end of the twelfth week of a regular semester or before the end of the sixth week of a summer session.

In the exceptional case of a student entering the first work phase prior to the first academic phase, he must apply for early admission to the University, have been accepted by the University and registered for the co-op work phase for the academic term matching said work phase.

GRADUATE STUDY

A program of graduate studies is offered by the College of Engineering leading to the Master of Science degree with a major in Chemical Engineering, Civil Engineering, 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 graduate program in **Science of Materials.**

A program of graduate study in **Computer Science** is available in the Engineering College. 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 pp. 158-162). Special attention is called to the rules on probation and suspension.

COURSES NUMBERED 300 OR ABOVE

A student may be admitted to courses numbered 300 or above in the College of Engineering (1) if he is not more than 8 hours short of completing all freshman and sophomore requirements, (2) if he has completed all prerequisites for the course in question, (3) if the remaining lower-division requirements appear on his 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, he 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. The student must file an application for his degree with his department chairman during the second semester of his junior year, but in no case later than when he has 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 his 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. 164.
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 will 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 will be reduced by three.

CURRICULA OFFERED BY THE COLLEGE OF ENGINEERING

The College of Engineering offers work in the departments listed in alphabetical order on the following pages. Curriculum requirements are set forth under each department. Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction."

COURSE OF STUDY FOR ALL ENGINEERING STUDENTS

Freshman Year

First Semester	Cr.	Hrs. Lect.-Lab.	Second Semester	Cr.	Hrs. Lect.-Lab.
Chem 101L Gen	4	(3-3)	CE 102L Engr Comp Meth	3	(2-4)
Engl 101 Wrtg w/Rdgs in Expos	3	(3-0)	Physcs 160 Gen	3	(3-0)
CE 104L Intro to Engr	4	(1-6)	Math 163 Calculus II	4	(4-0)
Math 162 Calculus I	4	(4-0)	§Elective	3	(3-0)
			***Science Elective	3 or 4	(3-3)
	15	(11-9)		16 or 17	(15-7)

NOTES:

1. 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 on the ACT mathematics test will be required to take remedial mathematics.

§ Humanities or social science elective. Consult adviser.

*** Students who intend to major in Chem Engr must take Chem 102L or 122L. Others should consult adviser.

2. Students with unsatisfactory scores in the ACT English area will be required to take remedial English.

3. For a description of the freshman courses refer to p. 430 for Mathematics; to p. 400 for English; to p. 327 for Chemistry; to p. 381 for Civil Engineering; and to p. 480 for Physics.

4. The courses listed in this freshman 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. 155 for an explanation of the grading system).

CHEMICAL ENGINEERING

Chemical Engineering is that branch of engineering concerned with the development and application of manufacturing processes in which chemical or certain physical changes of material are involved.

The course in Chemical Engineering is designed to afford the student broad training in the fundamentals of mathematics, physics, chemistry, and engineering to meet the needs of the chemical or related industries where men competent to design, develop, and operate new processes and to improve existing processes are required. The chemical engineer is not specifically trained for only one industry. The distinctly professional courses of Unit Operations and Unit Processes enable him to apply his knowledge to any chemical or process industry with relatively little difficulty.

The graduate chemical engineer will find many avenues of opportunities in research and development; production, operation, and maintenance; management and administration; design, construction, and installation; technical service and sales; consulting; teaching, and technical writing, etc., in such industries as industrial chemicals, petroleum, explosives, plastics, rubber products, paper and allied products, synthetic rubber, food products, drugs, insecticides, glass, cement, clay, iron and steel, paints and varnishes, oils, soaps, rayon and synthetics.

CHEMICAL ENGINEERING LABORATORY. The Chemical Engineering building has a floor space of over 8,000 sq. ft. and contains a laboratory adequately equipped with pilot plant equipment for use in the study of Unit Operations of Chemical Engineering such as fluid flow, heat flow, evaporation, distillation, air conditioning, absorption, filtration, crystallization, etc., and Unit Processes such as nitration, sulfonation, hydrogenation, etc.

The process development laboratory is well equipped for the study of small scale manufacture of chemical products.

Adequate classroom space and design laboratory are available. Shop facilities are in conjunction with the well-equipped Engineering Shop.

CURRICULUM IN CHEMICAL ENGINEERING

Hours required for graduation: 130*

Sophomore Year

First Semester	Cr.	Hrs. Lect.-Lab.	Second Semester	Cr.	Hrs. Lect.-Lab.
Math 264 Calculus III	4	(4-0)	Math 265 Vector Analysis	4	(4-0)
Physcs 161 Gen	3	(3-0)	Physcs 262 Gen	3	(3-0)
Physcs 163L Gen Lab	1	(0-3)	Physcs 264L Gen Lab	1	(0-3)
Chem 301 & 303L Organic	4	(3-3)	Chem 302 & 304L Organic	4	(3-3)
Ch E 251 Chem Calc	3	(3-0)	Ch E 252 Ind Stoichiometry	3	(3-0)
Econ 200 Prin and Probs	3	(3-0)			
	18	(16-6)		15	(13-6)

* Reduced for students placed ahead in freshman mathematics and/or English.

Junior Year

First Semester			Second Semester		
Ch E 401 Prin of Thermo I	3	(3-0)	Ch E 402 Prin of Thermo II	3	(3-0)
Ch E 411 Unit Oper I	3	(3-0)	Ch E 412 Unit Oper II	3	(3-0)
Chem 311 Physical	3	(3-0)	Ch E 414L Unit Oper Lab I	2	(0-6)
Elective	6	(6-0)	Chem 312 & 313L Physical	4	(3-3)
			EE&CS 203 Intro to EE I	3	(3-0)
			Elective	3	(3-0)
	15	(15-0)		18	(15-9)

Summer Session

Ch E 415L Unit Oper II	2	(0-6)

Senior Year

First Semester			Second Semester		
Ch E 413 Unit Oper III	3	(3-0)	Ch E 398 Field Trip	0	(0-0)
Ch E 451 Seminar	1	(1-0)	Ch E 452 Seminar	1	(1-0)
Ch E 481L Proc Lab I	2	(0-6)	Ch E 472 Ch E Econ	3	(3-0)
Elective	3	(3-0)	Ch E 482L Proc Lab II	2	(0-6)
Elective	6	(6-0)	Ch E 494L Ch E Design	3	(2-3)
			Elective	6	(6-0)
	15	(13-6)		15	(12-9)

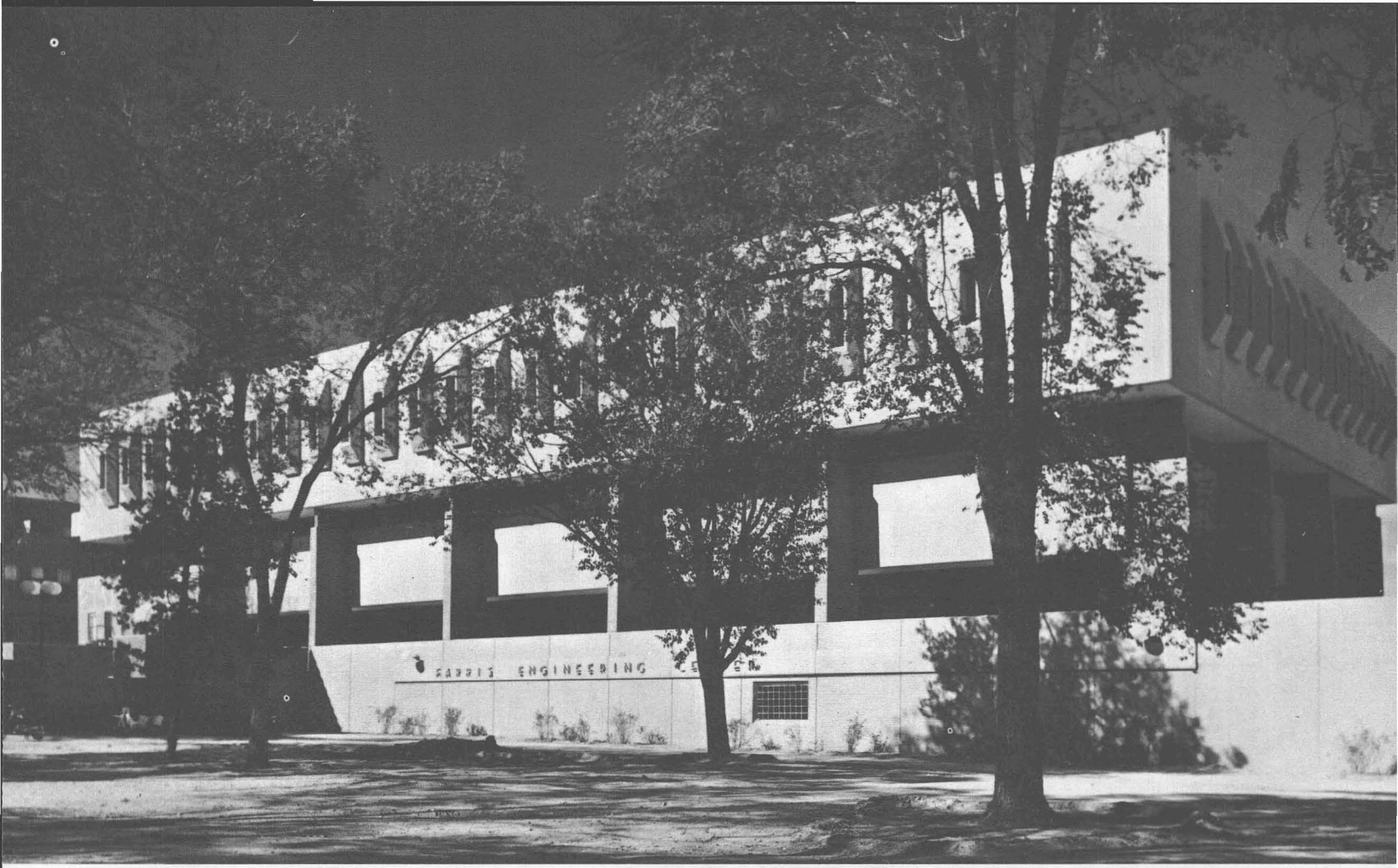
NOTE:

Electives, in consultation with the Department Chairman, may be chosen from technical or non-technical fields depending upon the needs of the student. Students enrolled in the ROTC programs may, with the approval of the Department Chairman, substitute Aerospace Studies or Naval Science for up to 6 hours of technical electives.

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 continues 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 ful-



Farris Engineering Center

fill 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 which is offered by the Department of Civil Engineering. This option, which culminates in a bachelor's degree in Civil Engineering, allows the student to take courses in accounting, economics, construction management, labor relations, and other construction-related courses. Students who wish to take the construction option must enter the program at the start of their sophomore year, and they will be 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. 233 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 Chairman of the Department of Civil Engineering.

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 degree within five years. The student should begin his 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. Freshmen engineering students are introduced to the use of the IBM 360 Computer. Sophomore and upper division classes have access to key punch machines and the computer. 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*

Sophomore Year

First Semester	Cr.	Hrs. Lect.-Lab.	Second Semester	Cr.	Hrs. Lect.-Lab.
Math 264 Calculus III	4	(4-0)	Math 265 Vector Analysis	4	(4-0)
Physcs 161 Gen	3	(3-0)	Physcs 262 Gen	3	(3-0)
Physcs 163L Gen Lab	1	(0-3)	CE 270L Constr Mater	1	(0-3)
CE 202L Engr Statics	3	(2-3)	CE 282L Engr Surveys	2	(1-3)
CE 281L Engr Meas	3	(2-3)	ME 206L Dynamics	3	(2-3)
Engl Elective	3	(3-0)	EE&CS 203 Intro to EE I	3	(3-0)
or					
Sp Com 255 Pub Spkg	3	(3-0)			
	17	(14-9)		16	(13-9)

Junior Year

Math 311 Engr Math	3	(3-0)	CE 360L Soil Mech	3	(2-3)
CE 302 Mech of Materials	3	(3-0)	CE 306 Struc Anal II	3	(3-0)
CE 303L Mech of Mater Lab	1	(0-3)	CE 332 Water Res & Hydr E I	3	(3-0)
CE 305 Struc Anal I	2	(2-0)	CE 324L Struc Des in Metals	3	(2-3)
CE 331L Fluid Mech	3	(2-3)	CE 336L Sanitary Engr I	3	(2-3)
CE 382 Transp Engr	2	(2-0)	Elective	3	(3-0)
Elective	3	(3-0)			
	17	(15-6)		18	(15-9)

Senior Year

CE 411 Reinf Concr Des	3	(3-0)	Econ 200 Prin and Probs	3	(3-0)
CE 370 Engr Mater Science	3	(3-0)	Technical Electives	9	(9-0)
CE 490 Prof Probs in Engr	2	(2-0)	Elective	3	(3-0)
ME 301 Thermodynamics	3	(3-0)			
Technical Elective	2	(2-0)			
Elective	3	(3-0)			
	16	(16-0)		15	(15-0)

NOTES:

Electives are to be chosen from the humanities and social sciences. See Department Chairman for list of approved courses.

See Department Chairman for list of approved technical electives. Students enrolled in the ROTC programs may, with approval of the Department Chairman, substitute Aerospace Studies or Naval Science for up to 6 hours of technical electives.

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.

Students interested in pursuing individual study may do so under the departmental honors program or courses in individual problems.

AREAS OF SPECIALIZATION. The curriculum provides considerable freedom in choice of electives, particularly during the senior year. The student can pursue his 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.

* Reduced for students placed ahead in freshman mathematics and/or English.

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. The elective structure of the curriculum provides an opportunity for specialization in computer science. A student may elect as many as 30 credit hours of coursework in the computer and related areas in this program.

SPECIAL 5-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 semester a planned program of related engineering work experience in industry.

For students who wish to combine a B.S. Degree in engineering with a Master's Degree in Business Administration, there is available in cooperation with the School of Business and Administrative Sciences a "three-two" program. The student must satisfy the academic requirements of both entities, and early consultation on his 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.

CURRICULUM IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Hours required for graduation: 130*

Sophomore Year

First Semester	Cr.	Hrs. Lect.-Lab.	Second Semester	Cr.	Lect.-Lab.
Physcs 161 Gen	3	(3-0)	EE&CS 207L EE Lab II	2	(1-3)
Physcs 163L Gen Lab	1	(0-3)	EE&CS 213 Circ & Systems I	4	(4-0)
EE&CS 203 Intro to EE I	3	(3-0)	Physcs 262 Gen	3	(3-0)
EE&CS 206L EE Lab I	2	(1-3)	Physcs 264L Gen Lab	1	(0-3)
Math 316 Appl Ordinary Diff Equations	3	(3-0)	Math 264 Calculus III	4	(4-0)
Elective	3	(3-0)	Elective	3	(3-0)
	15	(13-6)		17	(15-6)

Junior Year

First Semester			Second Semester		
CE 202L Engr Statics	3	(2-3)	ME 206L Dynamics	3	(2-3)
EE&CS 313 Circ & Systems II	4	(4-0)	Math Elective	3	(3-0)
EE&CS 321 Electronic Circ I	3	(3-0)	EE&CS 322 Electronic Circ II	3	(3-0)
EE&CS 325L Electronics Lab I	2	(1-3)	EE&CS 326L Electronics Lab II	2	(1-3)
EE&CS 361 Electromag Fields and Waves I	3	(3-0)	Physcs 330 Atomic & Nuclear or EE&CS 370 Physical Properties of Elec Engr Materials	3	(3-0)
			EE&CS 362 Electromag Fields and Waves II	3	(3-0)
	15	(13-6)		17	(15-6)

* Reduced for students placed ahead in freshman mathematics and/or English.

Senior Year

First Semester			Second Semester		
ME 301 Thermodynamics	3	(3-0)	EE&CS Elective Lab	2	(1-3)
EE&CS Elective Lab	2	(1-3)	Electives	15	(15-0)
Electives	12	(12-0)			
	17	(16-3)		17	(16-3)

NOTES:

1. At least 18 hours of electives are to be taken in the humanities and social sciences.
2. Normally, at least 12 hours of electives and two elective laboratories are taken in Electrical Engineering and Computer Science, to form a coherent program.
3. The remaining electives may be taken in any field with departmental approval. Students completing the ROTC program may, with the approval of the Department Chairman, substitute up to 6 hours of Aerospace Studies or Naval Science as free electives.
4. Prior to completion of 95 semester hours, the student must obtain Departmental approval for the remainder of his degree program.

MECHANICAL ENGINEERING

Mechanical engineering is concerned with engineering research, development, design, production, and operation of mechanical systems, as well as with the management of these activities. In general, mechanical systems either generate power from fuel, or they transmit power or motion. Typical mechanical systems include: power plants, such as central electrical power generation stations, jet and rocket engines, and fuel cells; environmental control systems; and all kinds of devices for transmitting or controlling force, motion and power.

In view of the rapid expansion and changes taking place in technology, the preparation of the engineering student must be broad; hence the program of study is designed to give the engineer not only the basic skills of his profession but also a general education which enhances the ability to adapt to the changing needs of his profession. The undergraduate curriculum begins with a thorough preparation in mathematics and physical sciences together with studies in the humanities and social sciences. These subjects are integrated with an introduction to engineering and engineering design, as well as fundamental subjects in engineering science: mechanics, thermodynamics, materials science, and electrical circuits and devices. With this as a foundation, the student is introduced to the analysis and design of significant engineering systems. Facility in the use of digital computers is developed throughout the curriculum.

In the senior year, students have the opportunity to choose technical electives which expand upon or apply the principles previously learned. Students may choose electives to prepare for graduate study, to enhance their preparation for a broad career in mechanical engineering, or they may choose sequences of technical electives to gain proficiency in selected areas.

The laboratory content of the curriculum provides reinforcement of basic concepts and principles, as well as instruction in the techniques of engineering measurements and the methods of experimental engineering.

The Mechanical Engineering Department participates in the **Cooperative Education Program** described earlier in this catalog under the heading "College of Engineering." Interested students desiring further information should contact the Department Chairman or the Director of the **Cooperative Education Program.**

A combined ME-MBA program is available in which a student may earn both

a B.S. in Mechanical Engineering and a Master of Business Administration degree within five years. Study during at least one summer session is necessary. To complete requirements for both degrees in the minimum amount of time, the student should begin his planning for the combined program during the sophomore year. Details are available from the Department of Mechanical Engineering and the School of Business and Administrative Sciences.

Graduate study for the Master of Science and Doctor of Philosophy degrees is offered by the department. Programs are offered with concentration in the areas of solid mechanics, fluid mechanics, thermodynamics, design, computing science or heat transfer. In addition, programs may be arranged to fit the special interests of students to accomplish a specific goal. These programs may be interdepartmental or interdisciplinary. For further information on graduate programs, contact the Graduate Adviser in the Mechanical Engineering Department.

The department operates a number of laboratories in support of its instructional and research programs. Currently in operation are the following: analog laboratory, energy conversion laboratory, fluid mechanics laboratory, transducer development laboratory, heat transfer laboratory, materials testing laboratory, and gas dynamics laboratory.

The department also operates a machine shop in cooperation with the other departments of the College of Engineering. This shop supports both the instructional and research programs and is available to qualified students and faculty.

CURRICULUM IN MECHANICAL ENGINEERING

Hours required for graduation: 130*

First Semester	Cr.	Hrs. Lect.-Lab.	Second Semester	Cr.	Hrs. Lect.-Lab.
Sophomore Year					
Math 264 Calculus III	4	(4-0)	Math 265 Vector Analysis	4	(4-0)
Physcs 161 Gen	3	(3-0)	Physcs 262 Gen	3	(3-0)
Econ 200 Prin and Probs	3	(3-0)	ME 206L Dynamics	3	(2-3)
ME 201L Intro to Design	3	(2-3)	EE&CS 203 Intro to EE I	3	(3-0)
CE 202L Engr Statics	3	(2-3)	Elective	3	(3-0)
	16	(14-6)		16	(15-3)
Junior Year					
ME 300 Mech Engr Anal	3	(3-0)	ME 302 Thermochem & Gas Dyn	3	(3-0)
ME 301 Thermodynamics	3	(3-0)	ME 320 Heat Transfer	3	(3-0)
ME 317 Fluid Mech	3	(3-0)	ME 357L Intro to Mech Vibrations	3	(2-3)
ME 314L Dyn of Mech Sys	3	(2-3)	ME 318L ME Lab I	2	(0-6)
EE&CS 204 Intro to EE II	3	(3-0)	ME 370 Engr Mater Science	3	(3-0)
CE 302 Mech of Materials	3	(3-0)	Elective	3	(3-0)
	18	(17-3)		17	(14-9)
Senior Year					
ME 358L Design of Sol Sys	3	(2-3)	Elective	6	(6-0)
ME 363L Anal of Fluid Sys	3	(2-3)	Technical Elective	9	(9-0)
ME 351L ME Lab II	2	(0-6)	Basic Science or Technical elective	2-3	(2-0)
Elective	3	(3-0)			
Technical Elective	3	(3-0)			
	14	(10-12)		17-18	(17-0)

* Reduced for students placed ahead in freshman mathematics and/or English.

NOTES:

Electives are to be chosen from the humanities and social sciences, with the approval of the Department Chairman.

Technical electives may be chosen from the following courses: ME 341, 350, 352L, 355, 356, 359L, 365, 401, 402, 414, 451-2, 455, 461-2, 480, 482, and other engineering and science courses, with approval of the Department Chairman. Students enrolled in the ROTC programs may, with approval of the Department Chairman, substitute Aerospace Studies or Naval Science for up to 6 hours of technical electives.

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 men 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 these new areas, basic research relating to the end product is equally as important as the development, design and production of the product.

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 opposed to emphasis on 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. Nuclear engineering graduate programs are available leading to a Master of Science and to a Doctor of Philosophy. A student expecting to do graduate work in nuclear engineering should concentrate on physics, mathematics, and nuclear engineering in his 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-201 critical reactor; Febetron flash x-ray machine, 20,000 curie Co-60 facility, activation analysis cell; pulsed neutron generators; natural uranium, sub-critical reactor; gamma-ray spectrometer; multi-channel 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 311 & 312 Engr Math and Adv Engr Math
ME 301 Thermodynamics
ME 320 Heat Transfer

ME 317 or CE 331L Fluid Mechanics
ME or CE 370 Engineering Materials Science
EE&CS 203 & 204 Intro to EE I, II
EE&CS 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 470 Materials for Nuclear Applications

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 architecture, 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. The choice is yours to make. 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.

Each of the programs offered by the College is described below. If you feel you need advice in selecting a program of studies, we encourage you to talk to your department chairman or to a faculty adviser. If you have special problems you may also wish to seek the help of the professional counselors in the University Counseling Center (see p. 148).

You should also read carefully the General Academic Regulations of the University (p. 155) and the listing of courses offered by the College. These are under nine headings:

Architecture p. 306
Art (Studio) p. 308
Art History p. 311
Dance p. 506
Film p. 506
Fine Arts p. 406
Music p. 464
Music Education p. 469
Theatre Arts p. 505

In reading the course descriptions, note carefully the prerequisites that are specified, for 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

If you come to the University as a freshman, you will first be enrolled in the University College. The purpose 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. 172. The College of Fine Arts has no special requirements other than those that are stated there.

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. We require for admission a minimum of 26 hours of acceptable college credit, with a grade average of 2.0, or better, in all the courses you have attempted.

If you plan to enter one of the programs leading to teacher certification you should also read the requirements for admission to teacher education on pp. 203-204.

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.§
3. No more than 4 hours of physical education activity courses may be counted toward a degree.

At the beginning of the first semester of your senior year, you should complete an application for a degree. This application is made in the office of the Assistant Dean of the College. If you fail to file an application, you may be delayed in receipt of your degree.

SCHOLASTIC STANDARDS

The curricula that lead to the degrees of Bachelor of Fine Arts and Bachelor of Music are **pre-professional** curricula. They are designed for students who plan to enter graduate school for the professional study of architecture or 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.**

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. Programs in excess of 18 hours should be attempted only if you know you can undertake them successfully.

If your grades are high, you might wish to consider enrolling in a departmental honors program. For general information about these programs, see p. 166; for specific information about the program in your department consult your department chairman.

CURRICULA

ARCHITECTURE

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

§ An exception is made for students who are admitted from the University College under provision 2(b), p. 173. Please consult the Assistant Dean of the College if your admission is on this basis.

undergraduate program is designed to provide broad experience in architecture, planning, and related environmental concerns, as preparation for entry into one of the three options at the graduate level. For further information about the graduate program, please see the **Graduate School Bulletin.**

If you intend to study architecture, you should emphasize mathematics, physics, social sciences, and art in high school.

BACHELOR OF FINE ARTS DEGREE

The B.F.A., with a major in architecture, is granted upon completion of 128 hours, as outlined below. Among the courses completed outside the major, you must include a concentration of no less than 18 hours within some single department.

Please note that you must also satisfy all general College and University requirements for graduation. Read carefully the paragraph on p. 247 (Scholastic Standards) which permits the faculty to exclude from the program any student whose grade average in his major field of study falls substantially below 3.0.

1.	Courses outside the major. Of these, at least 30 hours must be selected from courses offered by departments of the College of Arts & Sciences, including a minimum of 6 hours in mathematics; and at least 6 hours must be selected from courses in art, art history, dance, film, music, or theatre arts.	48 hours
2.	Major in architecture, including 6 hours in art and/or art history and 9 hours in civil engineering and/or engineering. (**Note:** Hours which are used as a part of the major may not also be used in satisfaction of requirements outside the major.)	70
3.	Additional courses in any field	10
	Total	128 hours

ART

The majors in studio, art history, and art education offered by the College of Fine Arts are described below. The major in art offered by the College of Arts and Sciences is described on p. 308.

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.

PRE-PROFESSIONAL CURRICULUM

The pre-professional curriculum leading to the Bachelor of Fine Arts degree is designed for students who anticipate further study at the graduate level. If you enroll in this program, you should read carefully the paragraph on p. 247 (Scholastic Standards) which permits the faculty to exclude from the program any student whose grade average in his major field of study falls substantially below 3.0. Both the studio courses and the 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 probably best advised to follow a program of studies leading to the B.U.S. degree (see p. 173). Alternatively, you may take a number of studio courses as a part either of the general (liberal arts) curriculum or the art education curriculum leading to teacher certification. If you are uncertain which program best suits your needs, you should talk to the department chairman or a faculty adviser.

The program leading to the B.F.A. is as follows:

1.	Courses outside the major. Of these, at least 30 hours must be selected from courses offered by departments of the College of Arts and Sciences, of which at least 6 hours must be in English, including 192; and at least 6 hours must be selected from courses in architecture, dance, film, music, or theatre arts.	48 hours
2.	Major in art:	
	(a) 18 hours in art history courses, including 130; and	
	(b) 52 hours in studio courses, including 123, and 6 hours in courses numbered 400 or above in a single studio field.	70
3.	Additional courses in any field.	10
	Total	128 hours

GENERAL (LIBERAL ARTS) CURRICULUM

A major in art history is offered under the general curriculum. It is also possible within this curriculum to combine study of art history with a limited specialization in studio courses. These two programs, both of which lead to the degree of Bachelor of Arts in Fine Arts, are described below:

Art History Emphasis

1.	Courses outside the major. Of these, at least 39 hours must be selected from courses offered by departments of the College of Arts and Sciences, including at least 6 hours of English (including 102), Hist 101 and 102, and as many semesters of one foreign language as are necessary for completion of the fourth semester course in that language; and 6 hours must be selected from courses in architecture, dance, film, music, or theatre arts.	60 hours
2.	Major in art:	
	(a) 33 hours in art history courses, including 130, 270, 271, 272, and a minimum of 21 hours in courses numbered 300 or above; and	
	(b) 15 hours in studio courses, including 123.	48
3.	Additional courses in any field.	20
	Total	128 hours

Studio Emphasis

1.	Courses outside the major. Of these, at least 39 hours must be selected from courses offered by departments of the College of Arts and Sciences, of which at least 6 hours must be in English, including 102; and 6 hours must be selected from courses in architecture, dance, film, music, or theatre arts.	60 hours
2.	Major in art:	
	(a) 15 hours in art history courses, including 130; and	
	(b) 33 hours in studio courses.	48
3.	Additional courses in any field.	20
	Total	128 hours

CURRICULA IN TEACHER EDUCATION

If you are planning to become a teacher of art in the public schools, you may enroll either in the College of Fine Arts or the College of Education. If you choose to enroll in the College of Fine Arts, the degree you will receive upon completion of requirements will be either the Bachelor of Fine Arts or the Bachelor of Arts in Fine Arts. The B.F.A. is awarded only to those who complete 70 hours or more in courses offered by the department of art. The B.A. in Fine Arts is awarded to students who complete fewer than 70 hours in such courses.

Two closely related curricula are offered. One of these leads to certification to teach art and a second subject in grades 7-12. In this program, you must complete a departmental minor of at least 18 hours in one of the approved fields listed on p. 211. The other curriculum leads to certification to teach art (but not a second subject) in grades K-12. In this program a minor is not required. In either curriculum, we strongly recommend that you complete a major of at least 50 hours in courses offered by the department of art; in the K-12 program, a major of at least 50 hours in such courses is required.

In addition to your major (and minor, if needed) you must complete 24 hours in professional education courses. Please note that although the College of Fine Arts has no "group requirements" you must also complete such courses in other fields as are required for teacher certification. You will find information about these courses and specific screening requirements for admission to a teacher education program in the College of Education section of this catalog.

MUSIC

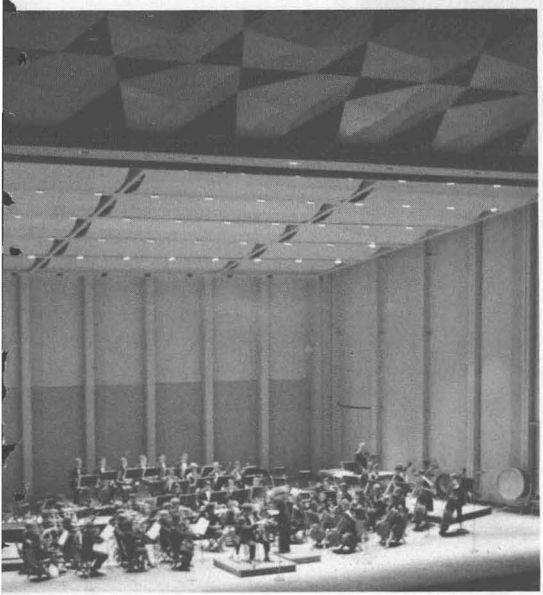
NASM MEMBERSHIP

The University of New Mexico is a member of the National Association of Schools of Music. The 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.

MUSIC MAJORS

The majors in music are described below. Please note that in addition to stated course requirements you must also satisfy general College and University requirements for graduation. For minor study in music, please refer to p. 464.

Art
Museum



Popejoy
Hall

Department
of
Architecture

DEPARTMENTAL HONORS

Work in departmental honors is available to qualified students who wish to pursue special individual projects. Details should be discussed with the Honors Council of the department. Consult the office of the music department for further information.

PRE-PROFESSIONAL CURRICULUM

Several programs in music performance or music pedagogy are available all leading to the Bachelor of Music degree and comprising a total of 128 hours. If you enroll in any one of these programs, you should read carefully the paragraph on p. 247 (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. A handbook describing in detail the 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. Of these, at least 30 hours must be selected from courses offered by departments of the College of Arts & Sciences; and 6 hours selected from courses in architecture, art, art history, dance, film, or theatre arts. (**Note:** Majors in vocal performance and vocal pedagogy must complete 18 hours in some combination of French, German, and Italian.) — 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; 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

Total 128 hours

Keyboard Performance:	4 hours in applied music; 2 hours in music theory (counterpoint); and 8 hours in music electives.
Instrumental Performance:	8 hours in applied music; 2 hours in ensemble; and 4 hours in music electives.

Vocal Performance:	4 hours in applied music; 2 hours in music history (473); 2 hours in diction for singers; and 6 hours in music electives.
Keyboard Pedagogy:	4 hours in applied music; 4 hours in music pedagogy; and 6 hours in music electives.
Instrumental Pedagogy:	8 hours in applied music; 2 hours in music pedagogy; and 4 hours in music electives.
Vocal Pedagogy:	6 hours in applied music; 4 hours in music pedagogy; 2 hours in diction for singers; and 2 hours in music electives.

For majors in theory and composition, the number of hours in applied music (par. 2(a) above) is reduced from 24 to 14. Additional hours (par. 2(f) 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; and
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 degree. 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. Of these, at least 39 hours must be selected from courses offered by departments of the College of Arts & Sciences, including as many semesters of one foreign language as are necessary for completion of the fourth semester course in that language; and 6 hours in architecture, art, art history, dance, film, or theatre arts. 60 hours
2. Major in music, including:
   (a) 24 hours in music history (see curriculum p. 467);
   (b) 18 hours in music history (see curriculum p. 466, 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) 4 hours in ensemble; and
   (e) 14 hours in music electives. 68

Total 128 hours

CURRICULUM IN MUSIC EDUCATION

If you are planning to become a teacher of music in the public schools, you may enroll either in the College of Fine Arts or the College of Education. In

either case, 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. 224-225 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.

1. Hours outside the major, including
   (a) 9 hours in Engl 101 and 102, and Sp Com 256 (or approved substitute)
   (b) *8 hours in biological and/or physical sciences
   (c) 3 hours in psychology
   (d) 9 hours in humanities and social sciences, including at least one course in English literature
   (e) 6 hours in fine arts electives (TA 315 and 316 are recommended)
   (f) 3 additional hours in any field
   (g) 6 hours in education: Ed Fdn 290 and 300

   44 hours
2. Major in music, including
   (a) 22 hours in applied music
   (b) 24 hours in music theory
   (c) 4 hours in conducting
   (d) 6 hours in music history
   (e) 8 hours in ensemble (NOTE: for keyboard concentrates this must include 6 hours in chorus, and 2 hours in 231 and/or 395)

   64 hours
3. Courses in music education: 194, 294, 313, 366, 400, 444, 446, 451, and 461

   20 hours

THEATRE ARTS

The majors in theatre arts offered by the College of Fine Arts are described below. For a description of the major in theatre arts in the College of Education and for minor study requirements please refer to the "Courses of Instruction" section of this catalog.

In addition to the course requirements stated in the curricula below, students majoring in theatre arts will participate in all phases of production of one-act and three-act plays. So far as possible, these productions are correlated to the work done in the classroom.

PRE-PROFESSIONAL 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 degree.

Please note that in addition to the specific course requirements outlined

*See College of Education section, for definitions of biological and physical sciences.

below you must also satisfy all general College and University requirements for graduation. Read carefully the paragraph on p. 247 (Scholastic Standards) which permits the faculty to exclude from the program any student whose grade average in his major field of study falls substantially below 3.0.

The curriculum is as follows:

1. Courses outside the major. Of these at least 30 hours must be selected from courses offered by departments of the College of Arts & Sciences; and at least 6 hours must be selected from courses in architecture, art, art history, dance, film, or music. 48 hours
2. (a) Major in theatre arts, including courses 125 and 126.
   or
   (b) Major in theatre arts with an emphasis in television drama, including courses 125 and 126, and Sp Com 251, 265, 366, and 465 or 466. (Note: Hours which are used as a part of the major may not also be used in satisfaction of requirements outside the major.) 70
3. Additional courses in any field. 10

Total 128 hours

GENERAL (LIBERAL ARTS) CURRICULUM

This curriculum leads to the degree of Bachelor of Arts in Fine Arts. By comparison to the pre-professional curriculum, it is a program of broader orientation, with less concentration in drama.

1. Courses outside the major. Of these, at least 39 hours must be selected from courses offered by departments of the College of Arts & Sciences, including 9 hours chosen from Engl 339, 352, 353, 453, 470 or 487, and at least 6 hours must be selected from courses in architecture, art, art history, dance, film, or music. 60 hours
2. Major in theatre arts, including courses 125 and 126, and Dance 159. (Note: Hours which are used as a part of the major may not also be used in satisfaction of requirements outside the major.) 48
3. Additional courses in any field. 20

Total 128 hours

CURRICULUM IN TEACHER EDUCATION

This program leads to the degree of Bachelor of Fine Arts, with a certificate to teach in the public schools. In addition to the curriculum below, you are subject to all requirements for admission to a teacher education program (please see the College of Education section of this catalog).

1. Courses outside the major, including:
   (a) 15 hours in humanities and social sciences;
   (b) 8 hours in natural sciences;
   (c) 3 hours, Psych 102; and
   (d) 6 hours in architecture, art, art history, dance, film, or music. 32 hours

2. Major in theatre arts, including:
   (a) 51 hours in theatre arts, including 125 and 126;
   (b) 3 hours, Dance 159;
   (c) 18 hours in English: courses 101, 102, 220, 352, 353, 450, and 451. 72
3. Courses in education, including Ed Fdn 290, 300, and 310; Sec Ed 361 and 461, plus 3 hours of education electives. 24

Total 128 hours

TAMARIND INSTITUTE

Clinton Adams, Dean of the College of Fine Arts, Director

Tamarind Institute is a division of the College of Fine Arts, operated in association with Tamarind Lithography Workshop, Inc., of Los Angeles, California. The Institute was founded in June of 1970 in order to provide a permanent professional center for lithographic training, study, and research, together with the production of original lithographs under conditions that fulfill the highest esthetic and ethical traditions of the art. Tamarind Institute is supported in part by a grant from the Division of Humanities and the Arts of the Ford Foundation.

Fellowships and assistantships are available to qualified individuals who seek to enter careers as master-printers or 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 19th and 20th centuries.

The professional training program incorporates the experimental advances in artisan training developed by Tamarind Lithography Workshop. 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.

THE GRADUATE SCHOOL

GRADUATE WORK leading to the master's degree is offered in the following fields: Anthropology, Architecture, Art, Biology, Business Administration, Chemistry, Communicative Disorders, Comparative Literature, 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, Mathematics, Medical Sciences, Music, Philosophy, Political Science, Physics, Portuguese, Psychology, Public Administration, Sociology, Spanish, Speech Communication.

The degree of 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, and Romance Languages.

In Education, the degree of Doctor of Education is offered.

Applicants should contact the chairman 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 and the **Graduate School Bulletin** may be obtained by writing to the Dean of the Graduate School. 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, Nov. 15; for the summer session, April 15. No student is assured of admission until he has received an official offer of admission from the Dean of the Graduate School.

Although each application is reviewed individually, in general an over-all average of B and at least a B average in the intended major field are required for admission to regular graduate status and consideration for financial aid.

Assistantships and traineeships 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 non-scholastic reasons, such refusal will in no case be based upon race, color, sex, or religion.

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 gradepoint 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 Residence Center at Los Alamos. For information concerning this center, see p. 291.

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.).

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, Albuquerque, New Mexico 87106.

ADMISSION

A formal application of the School of Law must be filed by all students, both beginning and transfer.

The School of Law is continually concerned not only with its own curriculum but also with the quality of prelegal education and with the continuing self-education which should be pursued by all members of the profession. In consequence, it is urged that students enter the School with as broad a cultural and educational background as possible.

All applicants for admission to the School of Law are required to take the Law School Admission Test (LSAT), and to have a baccalaureate degree from an accredited college or university before registration.

Final selection of applicants will be made on the basis of the scholastic record in all college or university work attempted, scores received on the LSAT, and such other information as the Law School may require.

Beginning law students will be admitted at the opening of the fall semester only.

APPLICATION PROCEDURE

Along with the majority of law schools in the country, the University of New Mexico is participating in the Law School Data Assembly Service (LSDAS), administered by Educational Testing Service in Princeton, New Jersey. We believe that this service enables us to give better, and more personal, service to our applicants by reducing much of the routine paperwork of our admissions office. In effect, all that Educational Testing Service supplies through LSDAS is the raw data upon which our committee makes decisions.

HOW TO APPLY

Obtain an application form from the Law School; complete, sign, and return it to the Assistant Dean, The University of New Mexico School of Law, Albuquerque, New Mexico 87106. Enclose with your application the $10.00 application fee. This is non-refundable and is required of all first-time applicants to the School of Law.

Obtain a registration form for the LSDAS; complete, sign, and return it to Educational Testing Service, Box 944, Princeton, New Jersey 08540. Enclose with the registration form the proper fee and designate The University of New Mexico School of Law as one of the schools to which you wish a report sent.

The Law School Admission Test is administered by Educational Testing Service and is offered in October, December, February, April, and July. It is suggested that you take the test in October or December; taking it at a later date might result in your not being admitted if available space has been filled.

Brochures describing both the Law School Admission Test and the Law School Data Assembly Service, along with applications for each, may be obtained from Educational Testing Service, Box 944, Princeton, New Jersey 08540, from all law schools, and from most college placement offices or testing centers.

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 non-residents, membership dues for the Association. The current dues are $10.00 per year, payable to the School of Law at registration.

SCHOOL OF MEDICINE

A SCHOOL OF MEDICINE for the University of New Mexico was approved in 1960, and a grant for the initial development of the school was made available by the Kellogg Foundation in the same year. The New Mexico Legislature made a token appropriation toward support of the school at its 1961 session and in 1963 provided major support for future development. The School of Medicine enrolled its first entering class in the fall of 1964 and progress to the third year and subsequent full four-year program was approved in 1966. The first class received the M.D. degree in 1968.

FACILITIES

The Medical Science Building on the north campus near the Bernalillo County Medical Center was completed in 1967 and is now in full use. It contains first and second year student laboratories, study areas and conference rooms as well as office and laboratory space for faculty and administration. The Bernalillo County Medical Center, together with the Albuquerque Veterans Administration Hospital, provides the primary resource for student experience in clinical medicine.

PROGRAM

The School of Medicine is a professional and graduate school of the University. In addition to providing education in the basic and clinical sciences for the Doctor of Medicine degree, opportunities are available for work leading to a Doctor of Philosophy degree. Further resources for medical education at the internship, resident, and post-graduate education levels are offered through hospitals associated with the University program.

The educational program provides a unified experience in the biological science areas basic to medicine: anatomy, biochemistry, physiology, microbiology, pathology, pharmacology, clinical laboratory medicine, and an early introduction to clinical medicine through seminars, history-taking and physical diagnosis. The school program is planned to take advantage of recent advances in medical teaching, early involvement of the student in research, and multi-disciplinary approaches when appropriate. It is designed to provide an environment in which each medical student can develop to the level of his highest potential. The ability to recognize and achieve excellence is considered a primary attribute, whether a student will eventually become a practicing physician, a teacher, or a research scientist.

ADMISSION

In general, the admission requirements include a bachelor's degree from an accredited institution with a major field of concentration in an academic discipline within the arts and science college. Students who major in the humanities or social sciences are given equal consideration with those who major in the sciences, providing, of course, they have shown the ability to handle scientific material effectively.

In addition to the general requirements indicated above, the following specific courses must be taken:

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.

Applicants are required to take the Medical College Admission Test, preferably in May of their junior year, and in most instances an interview with the Committee on Admissions of the School of Medicine is necessary.

Exceptions to the general requirements outlined above may be made for special program students, for qualified students who wish to enter medical school after only 3 years of college, and at the discretion of the Committee on Admissions.

Preference for admission is given to qualified applicants who are residents of New Mexico or of 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 Coordinated Transfer System (COTRANS) and the Minority Applicant Registry (MED-MAR), operated by the Association of American Medical Colleges.

Admission materials may be obtained by writing to the American Medical College Application Service, 1776 Massachusetts Avenue, N.W., Washington, D.C. 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 15 December 1972.

FEES

Application Fee $10. Non-refundable.
Tuition and Fees—See "Student Expenses."

INFORMATION REQUESTS

Inquiries are welcome and interested students may write or call the Office of Admissions, School of Medicine, 915 Stanford Drive NE, Albuquerque, New Mexico 87106; (505) 277-3414.

MEDICAL LABORATORY SCIENCES PROGRAMS

The following Medical Laboratory Sciences Programs are offered through the UNM School of Medicine under the direction of the Department of Pathology:

1. a twelve month certificate program for Medical Laboratory Assistants;
2. a twelve month certificate program in Cytotechnology;

3. an integrated two year program for Medical Laboratory Technicians leading to the degree of Associate of Science in Laboratory Technology (see University College);
4. 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 (see College of Arts and Sciences).

MEDICAL LABORATORY ASSISTANT PROGRAM

A twelve month program offered to high school graduates to prepare them for positions as technical assistants in clinical and hospital laboratories. They perform the less complicated chemical, hematological, and microbiological tests under the supervision of medical technologists, physicians, and other laboratory professionals. Six months of theory and student laboratory study at the UNM School of Medicine is followed by six months of supervised practical experience at an approved, affiliated hospital laboratory.

The class is limited to twenty-four students and starts in January of each year. Students must be graduated from an accredited high school or possess acceptable GED equivalency. A Program Admissions Committee selects the class on the basis of educational records and vocational promise in the health career field as determined by personal interview.

Graduates of the program will be eligible and expected to take the national examination for Certified Laboratory Assistants administered by the American Society of Clinical Pathologists.

CURRICULUM

Md Lab 010—Theory and Practice of Laboratory Technology (Preclinical)
Md Lab 020—Practice in Laboratory Procedures (Clinical)
(Description of courses offered will be found in the catalog section "Courses of Instruction")

INFORMATION REQUESTS

Communications regarding application for the Medical Laboratory Assistant Program should be directed to the Director of Medical Laboratory Sciences Program, UNM School of Medicine, Albuquerque, New Mexico 87106.

CYTOTECHNOLOGY PROGRAM

The Cytotechnology Program consists of twelve months of instruction in processing techniques and microscopic examinations of body cells to detect the presence of cancer. Cytotechnologists routinely screen cells taken from any body organ, especially for the cervix, to recognize minute abnormalities of cell appearance that may signal the presence of early stages of cancer. Many lives are saved by these early detection methods. Suspicious smears are referred to the Pathologist for confirmation. Six months of theory and student laboratory study at the UNM School of Medicine are followed by six months of supervised practical experience at an approved cytology laboratory.

This specialized class is limited to four students and usually starts in September of each year.

Applicants must have completed at least two years of study (60 semester hours) at an accredited college or university which must include 12 semester hours of science courses (biology and/or chemistry).

INFORMATION REQUESTS

Communications regarding application for the Cytotechnology Program should be directed to the Director of Medical Laboratory Sciences Program, UNM School of Medicine, Albuquerque, New Mexico 87106.

MEDICAL LABORATORY TECHNICIAN PROGRAM

(See "University College" section of 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 Program in Medical Technology is of twelve months duration which meets the requirements and is approved by the AMA Council on Medical Education. It meets the requirements of the fourth year of study leading to a B.S. in Medical Technology degree as outlined at the following New Mexico colleges or universities: The University of New Mexico, 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 degree. Parent institutions award the degree upon satisfactory completion of the Medical Technology Program.

Two additional categories may be accepted to the program who meet the following requirements:

1. 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 below and register their intent with the Director of Laboratory Sciences Program upon transfer from the University College into the B.U.S. program.

REQUIREMENTS FOR ADMISSION TO THE MEDICAL TECHNOLOGY PROGRAM

Minimum educational requirements are three years (90 semester hours or 135 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. See "College of Arts and Sciences" section of the catalog for UNM degree requirements.

During the above three years the following are required:

1. Chemistry—a minimum of 16 semester hours (24 quarter hours) shall be required. This must include a general college chemistry course, including lecture and laboratory, and at least one semester of quantitative analysis. The other courses to complete the requirements may be selected from organic chemistry or biochemistry, plus other chemistry courses having prerequisites of general chemistry.
2. Biological Sciences—a minimum of 16 semester hours (24 quarter hours) acceptable towards a major in biological science is required. All required biological sciences must include lecture and laboratory. Survey courses are not acceptable. Courses to meet this requirement may be selected from the following subject areas: general biology, zoology, bacteriology, parasitology, histology, histologic technique, genetics or other courses acceptable toward a biological science major. At least one semester of a basic bacteriology course, including lecture and laboratory, must be included.
3. Mathematics—a minimum of one semester (one quarter) of college mathematics is required.
4. Physics—strongly recommended that a course in physics be included in the college courses taken.
5. Certification of the proficiency of a student by a college in any of the above required subjects may be accepted in lieu of these requirements; however, the student must still satisfy the three year requirement of 90 semester hours (135 quarter hours).

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—Theory and Practice of Medical Technology (Preclinical)
Md Lab 402—Practice in Medical Technology Procedures (Clinical)
(Description of courses offered will be found in the catalog section "Courses of Instruction")

Curriculum schedule:
Classroom and student lab—25 weeks; lecture hours—450-500.
Suggested clinical rotation at hospitals—25 weeks.

Chemistry-instrumentation	7	Blood Bank & Serology	4
Urinalysis	2	Bacteriology, Parasitology	5
Hematology	5	Clinical Microscopy	2

APPLICATION AND ADMISSION PROCEDURE

1. All applications and credentials required for the Medical Technology Program including personal interview must be fulfilled by April 1.

2. Entering freshmen and pre-professional transfer students should obtain information pertaining to admission to the University of New Mexico from the Director of Admissions.
3. Those students possessing pre-professional 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.

FINAL APPLICATION CHECK LIST

1. Send application and required credentials to the Dean of Admissions, The University of New Mexico prior to the April 1 deadline. Official transcripts of collegiate training must be sent directly from each institution previously attended.
2. Arrange appointment directly with the Director of the Medical Technology Program for personal interview: Medical Technology Program, UNM School of Medicine, 1001 Stanford, N.E., Albuquerque, New Mexico 87106; telephone (505) 277-5434.
3. All applications and credentials required for the Medical Technology Program including personal interview must be fulfilled by April 1.
4. The Admission Committee of the Medical Technology Program will select the class for the July entrance. The Office of Admissions of the University notifies the applicant of acceptance or nonacceptance.
5. Instructions for registration will be furnished by the Dean of Admissions, the University of New Mexico.
6. Prior to the beginning of the course, if candidate is accepted, an additional transcript of college grades must be submitted for evaluation to: Board of Schools, American Society of Clinical Pathologists, 2100 W. Harrison, Chicago, Illinois 60612. A fee of $5.00 should accompany the request for evaluation with instructions to forward the completed evaluation to: Director, Medical Technology Program, UNM School of Medicine, 1001 Stanford Drive, N.E., Albuquerque, New Mexico 87106.

FEES

Tuition for pre-professional courses is listed in the catalog under "Student Expenses."

Tuition for the professional program in Medical Technology:

	N.M. Residents	Non-residents
Md Lab 401	$215.25	$630
Md Lab 402	215.25	630
Total	$430.50	$1260

In addition to tuition, housing, and books the students in all Laboratory Sciences Programs are required to pay laboratory fees and to purchase white uniforms and supplies (approximate cost $75.00).

Various types of financial aid are available to University students generally.

In addition, there are certain scholarships from local and national organizations specifically for students enrolled in the Laboratory Sciences Program. Information may be obtained at the Student Aids Office and the office of the Director of the Laboratory Sciences Programs.

A stipend is offered each student maintaining acceptable academic and clinical performance during the program to help defray living costs. Funds for these stipends are generated by the affiliated teaching hospitals and may vary from year to year depending upon budget limitations.

The class which begins in July of each year is limited to twenty-four students. Transcripts of undergraduate credits must be approved by the Board of Schools, American Society of Clinical Pathologists before acceptance (see Application and Admission Procedures p. 265).

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 clinical portion of the Medical Technology curriculum is provided by the following affiliated hospitals: Bernalillo County Medical Center, Veterans Administration Hospital, Bataan Memorial Hospital and Lovelace Clinic, and Presbyterian Hospital Center. Student assignments to hospitals will be made by the Admissions Committee of the program. Student preferences will be given as much consideration as possible.

ASSOCIATE OF ARTS DEGREE 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 students 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 New Careers Program.

For information concerning eligibility in this program, contact: UNM School of Medicine's New Careers Program, 930 Stanford NE or call 277-5428.

ADMISSION

Total class enrollment in the CSW Program is limited to 75 students. Applicants are accepted on the basis of:

1. Meeting federal income guidelines
2. Be over 22 years of age (10% can be under)
3. Personal interview by staff of UNM School of Medicine New Careers Program

4. Personal interview by director of a community agency or their designated member.

CURRICULUM

1st Year		2nd Year	
Fall		Fall	
CSW 010 Intro to Community Services	0	Soc 216 Race & Cultural Relations	3
CSW 050 Field Placement	6	CSW 109 New Techniques of Assessment & Intervention	3
CSW 101 Survey of Inst	2	CSW 060 Advanced Field Placement	6
CSW 102 Principles of Interviewing	2	Elective (Optional)	3
Elective (Optional)	3		12–15
	10–13		
Spring		Spring	
Engl 101 Writing with Readings in Exposition	3	CSW 061 Advanced Field Placement	6
CSW 040 Towards Self Understanding	3	Soc 211 Social Problems	3
CSW 051 Field Placement	6	Engl 102 Writing with Readings in Literature	3
Elective (Optional)	3	Electives	3
	12–15		15
Summer		Summer	
CSW 052 Field Placement	6	CSW 062 Advanced Field Placement	6
Elective	3–6	Elective	3
	9–12		9
		TOTAL	67+ hours

DEGREE REQUIREMENTS:

1. Enrollment in UNM School of Medicine-New Careers Program
2. A UNM Scholarship Index of 2.0
3. A minimum of 67 hours of earned credit, including:

a) CSW 040, 101, 102, and 109	10 hours
b) CSW 050-051 and 060-061	36 hours
c) Engl 101 and Engl 102	6 hours
d) Soc 211 and Soc 216	6 hours
e) Electives	12 hours
	70 hours

COLLEGE OF NURSING

THROUGHOUT history, nursing has been responsive to the health needs of society. The faculty of the College of Nursing believes that it has as its primary responsibility the task of serving the citizens of New Mexico. The increasingly complex nature of the health care system demands even greater numbers of qualified professional nurses. In conjunction with all health professions, the professional nurse is an agent who acts in behalf of the patient in an effort to maintain or modify patterns of functioning related to the maintenance of optimal health.

The faculty of the College of Nursing, as an integral part of the University of New Mexico, believes that education is an organized, expanding, and integrative process focused on the learner. Through this process each student assimilates knowledge, examines values and is encouraged to develop that which is creative. The faculty is dedicated to the belief that baccalaureate education is the basis for professional nursing practice. Professional nursing practice requires a synthesis of knowledge drawn from the liberal arts and sciences, with particular emphasis on all aspects of human behavior.

PURPOSE

Graduates of the College of Nursing will be prepared as beginning practitioners with the ability to give patient and family-centered nursing care in hospitals and in the greater community. Graduates of the College of Nursing will be qualified to apply for graduate study in nursing, particularly in teaching, supervision, administration, and clinical specialty areas.

ACCREDITATION

The basic program in nursing was first accredited by the National League for Nursing in December 1959. The most recent accreditation was in 1965.

LICENSURE OF GRADUATES

Graduates of the College of Nursing are eligible to take the State Board Examinations which provide the legal basis for becoming registered nurses.

ADMISSION

All students seeking admission to the College of Nursing must meet requirements for admission to the University.

It is strongly recommended that high school students who contemplate coming into the Nursing program have completed 2 units of college preparatory mathematics and at least 2 units of a laboratory science (Biology, Chemistry, Physics).

Freshman students are admitted to the University College. A detailed statement of entrance requirements is in the "Admission and Registration" section of this catalog. Transfer from the University College to the College of Nursing requires:

1. Twenty-six hours of earned credit.
2. (a) Scholarship index of 2.0 or better on all hours attempted;

   or

   (b) Scholarship index of 2.0 or better on all hours attempted in the previ-

ous two semesters of enrollment. If fewer than 26 hours were attempted in the previous 2 semesters, a scholarship index of 2.0 or better 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 seeking to be accepted as transfer students from other accredited educational institutions must meet requirements for admission to the University.

Students seeking to transfer from other degree-granting colleges within the University, and those not within the University, must present at least 26 semester hours of acceptable credit with a scholarship index of 2.0 or better on hours attempted while enrolled in the other degree-granting college.

EXAMINATIONS TO ESTABLISH CREDIT

Students may request to establish or validate credit by examination for courses according to the policies stated under "General Academic Regulations." See also "Residence Requirements in Major and Minor" for limitations on credit earned by special examinations.

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. For descriptions of services and programs see "Student Services" section in this catalog.

Athletic, cultural, recreational, religious, and social activities of the University are available to all students. Students in the College of Nursing are eligible for membership in the National Student Nurses' Association through the New Mexico Student Nurses' Association.

Academic advisers assigned to students in the nursing program are selected from the faculty in the College of Nursing.

Students are responsible for their living arrangements and costs. Nursing students must comply with the University regulations as stated in the "Student Housing" section of this catalog.

Students are responsible for their own transportation to and from clinical facilities including public health. If owning and driving a motor vehicle, the student is responsible for maintaining licensure and insurance coverage.

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, his achievement may more nearly match his 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 over-all scholarship index of 3.2; (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 faculty. The level of honors at which the candidate shall be graduated is at the discretion of the faculty of the College of Nursing.

DEAN'S LIST

At the end of each semester the names of students who have made 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 3.2 or better.

SCHOLARSHIPS

Various types of financial aid are available to University students generally. In addition, there are certain scholarships, from local and national organizations and private individuals, which are specifically for students in the College of Nursing (see listing under Financial Aid section of this catalog). Information regarding scholarships, loans, and traineeships may be obtained at the College of Nursing and the University Student Aids Office.

EDUCATIONAL FACILITIES

Zimmerman Library, the general University library, is available to students in nursing.

The Library of the Medical Sciences includes medical-science and nursing publications.

Nursing classes are held in classrooms on the main campus and in clinical facilities.

CLINICAL FACILITIES

Clinical facilities are located in the greater Albuquerque area and include Bernalillo County Medical Center, Bataan Memorial Hospital, Presbyterian Hospital Center, Nazareth Hospital, St. Joseph Hospital, Veterans Administration Hospital, Bernalillo County Health Department, Sandia Base Army Hospital, and the Bernalillo County Mental Health Center.

Special learning opportunities, such as field trips to other facilities, may be arranged.

HEALTH PROGRAM

Students in the College of Nursing follow the requirements for medical examinations described in the "Admission and Registration" section of this catalog and use the Health Service described in the "Student Services" section of this catalog. Nursing students are required to carry insurance for hospitalization and medical care. Students who do not have health insurance policies will find an adequate policy available through the University. It may be purchased at the time of registration.

Students must present the following prior to registering for a nursing practice course:

1. A physical examination done within the year prior to the registration.
2. Up-to-date immunizations as specified by the College of Nursing.
3. An annual Tuberculin Test.

The annual Tuberculin Test and the immunizations, except oral Polio, can be received in the Student Health Service.

A student who is pregnant and who wishes to enroll in nursing courses which include clinical practice must present a doctor's statement of approval and have the permission of the Admission Progression and Graduation Committee of the College of Nursing.

UNIFORMS

Students are responsible for obtaining appropriate uniforms to be worn during nursing practice periods. Uniforms and caps are available at the UNM Bookstore.

FEES

There is a $2.50 laboratory fee for students, each in courses 201L and 202L. The fee for the National League for Nursing Achievement Tests for regularly enrolled Junior and Senior students is approximately $9.00.

ACADEMIC REGULATIONS

Students in the nursing program are subject to the general regulations of the University and in addition, to the specific regulations in the College of Nursing.

Students enrolled in the College of Nursing are expected to be progressing toward the Bachelor of Science in Nursing degree.

Students must have a cumulative scholarship index of 2.0 or better to be eligible to enroll in upper division Nursing courses.

Students must earn a grade of C or better in each junior level nursing course in order to progress to the senior level nursing course.

To enroll in an upper-division nursing course the student must have had the prerequisite nursing course during the year immediately preceding or must give evidence of knowledge of the content in the prerequisite course before being permitted to enroll in the upper-division nursing course.

Maximum credit load for which a student may register is 18 semester hours.

The College of Nursing reserves the right to require a student to withdraw for unprofessional conduct or unsafe nursing practice.

REQUIREMENTS FOR GRADUATION

The degree of Bachelor of Science in Nursing is granted to basic and registered nurse students on fulfillment of the following requirements:

1. Completion of 127 semester hours of course work of the prescribed curriculum.

2. Completion of 2 semester hours of non-professional activity physical education of which one hour in movement fundamentals is recommended. Veterans

and other students who are thirty (30) years old at the time of graduation are exempt from the P.E. requirement.

3. Completion of at least 60 semester hours of upper-division course work. Such courses are numbered 300 or above.

4. For minimum residence requirements, see "Degree Requirements" in the section of this catalog entitled "General Academic Regulations."

5. Students are required to have an overall scholarship index of 2.0 in Nursing in order to graduate. See also "Degree Requirements."

6. Student must earn a grade of C or better in each upper division nursing course.

7. Unanimous recommendation for the degree by the faculty of the College of Nursing.

CURRICULUM

Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction." Prerequisites are included in the course descriptions.

Students who participate in the General Honors program may apply General Studies seminars to satisfy appropriate requirements upon approval by the Dean, College of Nursing.

Students who wish to make substitutions in the program may present their request to the Admission, Progression, and Graduation Committee of the College of Nursing.

The following required curriculum is one suggested sequence; others can be arranged in consultation with adviser.

First Semester		Second Semester	
Freshman Year			
Engl 101 Wrtg w/Rdgs in Exp	3	Engl 102 Wrtg w/Rdgs in Lit	3
Chem 141L Elmts Gen Chem	4	Chem 281 Int Org & Biochem	4
Psych 101 Gen Psy I	3	Psych 102 Gen Psy II	3
Psych 103L Gen Psy I Lab	1	Psych 104L Gen Psy II Lab	1
Biol 121L Prin of	4	Biol 122L Prin of	4
PE Activity	1	*Elective	3
		PE Activity	1
	15 + PE		18 + PE
Sophomore Year			
Soc 101 Intro to	3	Pharm 276 Prin of	3
Biol 233L Paramed Micro or 393L Gen Bact	4	Biol 236L Paramed Anat-Phys	4
Physcs 102 Intro	3	Anth 101 Orig & Antiq of Man or 102 Dev of Culture	3
Nurs 201L Intro to Nursing Process	5	Nurs 202L Determ of Patient Care	5
	15		15
Junior Year			
Nurs 303 Med-Surg Nurs	4	Nurs 320 Pediatric Nurs	2
Nurs 304L Med-Surg Nurs Lab	6	Nurs 321L Ped Nurs Lab	3
Nurs 351 Psycho-Cult Aspects of	2	Nurs 330 Maternity Nurs	3
Psych 320 Developmental	3	Nurs 331L Mat Nurs Lab	3
*Elective	3	Nurs 352 Fund of Commun Hlth Nurs	2
		Literature	3
	18		16

* Electives—9 hours, 6 of which must be upper division, to be arranged in consultation with Nursing faculty adviser.

Senior Year

First Semester		Second Semester	
Nurs 450 Psychiatric Nurs	3		
Nurs 451L Psychiatric Nurs Lab	4	Nurs 452 Community Health Nurs	4
Nurs 463 Senior Nurs Practicum	3	Nurs 453L Commun Hlth Nurs Lab	5
Nurs 464L Senior Nurs Practicum Lab	3	Nurs 462 Nurs Seminar	5
*Elective	3		
	16		14

Total Completed: 127 hours and 2 PE

* Electives—9 hours, 6 of which must be upper division, to be arranged in consultation with Nursing faculty adviser.

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 his scientific training, stress is placed on inculcating in the student, a moral, civic and social responsibility to the public he will serve. The ethical relationship of the pharmacist to the public, to his 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 health matters related to his field of study.

The College of Pharmacy provides a consultant service to the profession in the State of New Mexico with respect to drug information and pharmacy practice. It is engaged in service responsibility to the Bernalillo County Medical Center in the area of pharmacy distribution, clinical pharmacy and radiopharmacy.

In addition, the Dental Programs are administered by the College of Pharmacy (see p. 281).

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 per cent of the graduates of colleges of pharmacy enter community pharmacy. 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 extended care 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 in editing or writing for pharmaceutical organizations. Positions as research workers 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 Pharma-

ceutical Education, the national accrediting agency in pharmaceutical education, and holds membership in the American Association of Colleges of Pharmacy.

SCHOLARSHIPS

In addition to financial aid that is available to University students generally, certain scholarships are available specifically to students in the College of Pharmacy. Information and applications may be obtained from the Office of the Dean, College of Pharmacy.

LAWS RELATING TO LICENSURE AS A PHARMACIST

The laws relating to the requirements for licensure as a registered pharmacist by examination in the State of New Mexico are presented below in simplified form.

Persons of good moral character who have satisfactorily completed not less than 30 semester hours in an accredited college of pharmacy, shall, upon application and payment of the required fee, be issued a certificate of registration as a pharmacy intern.

An applicant for examination for licensure as a registered pharmacist by the New Mexico Board of Pharmacy must be a graduate of an accredited college of pharmacy, must be not less than 21 years old, of good moral character, and not addicted to the use of drugs or alcoholic beverages. However, before he can receive a certificate as a registered pharmacist he must have had not less than one year of approved pharmaceutical experience under the direction of a qualified pharmacist. Further information regarding registration as a pharmacist intern or licensure as a pharmacist may be obtained by writing or contacting the Secretary of the New Mexico Board of Pharmacy, Room 911, 505 Marquette Avenue, N.W., Albuquerque, New Mexico 87102.

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 degree 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 four years of English. These are recommended subjects, NOT requirements for admission.

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

All freshman students are admitted to the University College. A detailed statement of entrance requirements is in the "Admission" section of this catalog.

ADMISSION FROM UNIVERSITY COLLEGE. The minimum requirements for transfer from the University College to the College of Pharmacy for the study of pharmacy 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 2 semesters of enrollment; provided that, if fewer than 26 hours were attempted in the previous 2 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.

Students who have not completed the recommended freshman Pharmacy program in the University College will almost certainly find it necessary to spend more than the normal time to complete the requirements for graduation.

(For admission requirements for students of Dental Hygiene, see p. 283).

TRANSFERS

Students who wish to transfer to the College of Pharmacy from other degree-granting colleges of the University, or New Mexico residents transferring from other accredited non-pharmacy institutions, must present at least 26 semester hours of acceptable credit with a grade-point average of at least 2.0 on all hours attempted in the other degree-granting colleges or institutions.

Admission of those students desiring to transfer from other colleges of pharmacy will be based on individual evaluation of transcripts and the above requirements.

SCHOLASTIC REGULATIONS

In general, students in the College of Pharmacy 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:

1. Deficiencies in grade points incurred while in residence may not be removed by an excess of grade points earned in extension or correspondence courses.

2. Credit will not be transferred by any required course taken in another institution if an unsatisfactory grade has been previously received in the course at the University of New Mexico. For this purpose a grade of F in a non-professional course, or a grade of D in a course in the fields of Pharmacy (Pharmacy and Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology, Pharmacy Administration, Institutional Pharmacy, Clinical Pharmacy, and Radiopharmacy) shall be considered to be an unsatisfactory grade.

3. Generally, only work of C quality or better is acceptable as credit

toward graduation in the required courses of the major fields of Pharmacy (Pharmacy and Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology, Pharmacy Administration, Institutional Pharmacy, Clinical Pharmacy, and Radiopharmacy). However, a student who receives grades of D in no more than a total of three such required courses may be granted credit toward graduation for the work in such courses. (For the purposes of administering this rule, each semester of a course which runs throughout the year shall be considered as a separate course.)

4. No student will be permitted to enroll in the professional courses of the fifth year if his grade point average is less than 2.0.

MAXIMUM NUMBER OF HOURS

Students in the College of Pharmacy may not normally enroll for more than 18 credit hours per semester unless special permission from the College of Pharmacy is obtained.

ACADEMIC ADVISEMENT

In order to provide proper assistance to students in the election of courses and other academic matters, the College of Pharmacy has established a system of academic advisement. Each student is assigned to a faculty adviser who is authorized to act in all academic matters which do not require the approval of the Dean. The faculty advisers assist students in planning their programs, approve all elections of courses, authorize changes in programs, and furnish advice on other academic matters. Students are urged to consult with their advisers regularly.

AFROTC AND NROTC

The courses in Aerospace Studies and Naval Science are acceptable as elective courses in the Pharmacy curriculum.

MINIMUM RESIDENCE REQUIREMENT

Students entering the College of Pharmacy with advanced standing from non-pharmacy colleges are required to complete not less than six semesters of fulltime resident study before they will be recommended for the degree of Bachelor of Science in Pharmacy. 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.

REQUIREMENTS FOR GRADUATION

The degree of Bachelor of Science in Pharmacy is granted upon completion of all the specified requirements. The candidate for this degree must:

1. Complete all the work outlined in the pharmacy curriculum.

Due to changes in the College of Pharmacy curriculum, elective requirements for graduation will differ depending upon the year of study the student is commencing. Non-professional electives shall include courses in the basic sciences and courses in the humanities, social sciences, and/or fine arts offered in the Colleges of Arts and Sciences, Education, Engineering, Fine Arts, and Nursing, the Schools of Law or Business and Administrative Sciences, or the

Departments of Aerospace Studies or Naval Science. Professional electives shall include elective courses offered by the College of Pharmacy as listed in the catalog.

Elective Requirements by year of study.

(a) For students entering the preprofessional and the first professional year in the fall semester, 1972-73, 12 hours of non-professional electives will be required in the first four years.§ Professional elective requirements to be taken in the fifth year will be announced in the 1973-74 catalog.

(b) For students entering the second professional year (third year) in the fall semester of 1972-73 at least 12 hours of non-professional electives will be required for graduation.§ Professional elective requirements to be taken in the fifth year will be announced in the 1973-74 catalog.*

(c) For students entering the third professional year (fourth year) in the fall semester 1972-73 at least 16 hours and not more than 21 hours of non-professional electives will be required for graduation.§§ Professional elective requirements to be taken in the fifth year will be announced in the 1973-74 catalog.*

(d) For students entering the fourth professional year (fifth year) in the fall semester 1972-73 at least 31 hours of professional and non-professional elective courses will be required for graduation.§§

2. Complete a total of not less than 160 semester hours.

3. Maintain a grade average of 2.0 on all hours attempted at the University of New Mexico in satisfying the scholastic requirement of the University for the bachelor's degree.

4. Receive grades of C or better in all required courses in the fields of Pharmacy (Pharmacy and Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology, Pharmacy Administration, Institutional Pharmacy, Clinical Pharmacy and Radiopharmacy). Except that a candidate who has received grades of D in no more than a total of three such courses, may be granted credit toward graduation for the work in such courses. (For the purposes of administering this exception, each semester of a course which runs throughout the year shall be considered as a separate course.)

5. Satisfy the minimum residence requirement.

6. Be unanimously recommended for the degree by the faculty of the College of Pharmacy.

CURRICULUM LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

(Description of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction.")

A. For all students: (a) enrolling in prepharmacy 1972-73 and (b) enrolling in second year in Semester I, 1972-73 and (c) enrolling in third year Semester I, 1972-73.

§ No more than two hours in non-professional physical education.

§§ No more than four hours in non-professional physical education.

* Professional electives taken before the fifth year may be accepted in lieu of the fifth year electives to be announced in the 1973-74 catalog.

First Year
(Preprofessional Year)

First Semester		Second Semester	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Chem 101L Gen	4	Chem 102L Gen	4
Biol 121L Prin of	4	Biol 122L Prin of	4
Math 180 Calc for Soc & Biol Sci I	3	Math 181 Calc for Soc & Biol Sci II	3
		Elective	3
	14		17

Second Year
(First Professional Year)

Pharm 231 Pharm Orient	2	Pharm 234 Hist of Pharmacy	2
Chem 301 Organic Chem	3	Chem 302 Organic Chem	3
Chem 303L Organic Chem Lab	1	Chem 304L Organic Chem Lab	1
Biol 393L Gen Bacteriology	4	Physics 105L Intro	4
Elective	3	Pharm 232 Soc-Econ Health Care	3
Elective	3	Pharm 236 O.T.C. Drugs & Products	2
		Elective	3
	16		18

Third Year
(Second Professional Year)

Pharm 341L Operative Pharm I	4	Pharm 342L Operative Pharm II	4
Pharm 343 Pharm Calc	2	Chem 324 Biochemistry	3
Pharm 345 Clinical I	2	Pharm 346L Clinical II	3
Chem 253L Quant Analysis	4	Pharm 374 Phmcol I	2
Biol 429L Cellular Physiol	4	Biol 430L Verte Physiol	5
	16		17

Fourth Year
(Third Professional Year)

Pharm 443L Physical Pharm	4	Pharm 444 Biopharmaceutics	4
Pharm 445L Clinical III	4	Pharm 446L Clinical IV	3
Pharm 463 Org Pharm Chem I	3	Pharm 464 Org Pharm Chem II	3
Pharm 475L Phmcol II	5	Pharm 476L Phmcol III	4
		Pharm 422 Pharmacy Law	3
	16		17

Students enrolling in the third year (second professional year) in Semester I, 1972-73 will be required to take Pharm 231 and Pharm 234 before graduation in addition to the above courses.

Fifth Year
(Fourth Professional Year)

Fifth year curriculum is currently under revision and will be published in the 1973-74 catalog.

B. For students enrolling in fourth year in Semester I, 1972-73:

Fourth Year
(Third Professional Year)

Pharm 443L Operative Pharm I	5	Pharm 444L Operative Pharm II	5
Pharm 475L Phmcol I	4	Pharm 476L Pharmcol II	5
Pharm 463 Org Phm Chem I	3	Pharm 464 Org Phm Chem II	3
Pharm 345 Clinical I	2	Pharm 422 Pharm Law	3
Elective	3		
	17		16

Fifth Year
(Fourth Professional Year)

First Semester		Second Semester	
Pharm 447L Disp Pharm I	5	Pharm 448L Disp Phm II	5
Pharm 477 Phmcol III	3	Pharm 234 Hist of Pharm	2
Electives	8	Electives	8
	16		15

The fifth year pharmacy electives courses will be presented in detail in the 1973-74 catalog.

C. For students enrolling in the fifth year (fourth professional year) Semester I, 1972-73:

Fifth Year
(Fourth Professional Year)

Pharm 423 Phm Management	3	Pharm 234 Hist of Pharmacy	2
Pharm 447L Disp Phm I	5	Pharm 448L Disp Pharm II	5
Pharm 463 Org Pharm Chem I	3	Pharm 464 Org Pharm Chem II	3
Pharm 477 Phmcol III	3	Elective	3
Elective	3	Elective	3
	17		16

DENTAL PROGRAMS

The Dental Programs have three offerings:

1. A two-semester Dental Assisting Program leading to a Certificate of Proficiency;
2. A two-year Dental Hygiene Program leading to the degree of Associate of Science in Dental Hygiene; and
3. A four-year (or more) program leading to the degree of Bachelor of Science in Dental Hygiene.

DENTAL ASSISTING

The Dental Assisting Program is a two-semester curriculum which starts each year in the fall semester only. It is open to applicants who meet University admission requirements and are selected by an Admissions Committee of the Program. Students transferring from another institution or from another college in this University must have a C average. On satisfactory completion of the program the student is awarded a Certificate of Proficiency in Dental Assisting.

Dental assistants are auxiliary personnel to the dental profession. Dental assistants perform supportive duties to the dentist in all dental procedures, assume responsibilities in dental office management and are responsible for instrument sterilization, x-ray developing and similar duties. Individuals trained as dental assistants can be employed immediately on completion of their education. Licensure is not required.

Each year the class is limited to 20 students due to limited teaching facilities. The Admissions Committee selects the class on the basis of high school records, ACT results and a personal interview.

Communications regarding application to the Dental Assisting Program may be directed to the Director of Dental Programs, The University of New Mexico, Albuquerque.

REQUIREMENTS FOR THE CERTIFICATE IN DENTAL ASSISTING

The Candidate for the certificate must:

1. Complete all work outlined in the curriculum.
2. Be unanimously recommended by full-time Dental Assisting Program faculty.

EXPENSES

In addition to tuition, housing, and school supplies, students in the Dental Assisting Program are required to purchase supplies and uniforms. The approximate cost of these expenses is $150.00.

LOANS AND SCHOLARSHIPS

Students of the Dental Assisting Program qualify for the same kinds of financial assistance as all full-time students at the University.

Scholarship awards up to a maximum of $200 are available to dental assisting students through the Juliette A. Southard Scholarship Trust Fund of the American Dental Assistants Association. Information concerning these is available from the office of the Director of the Dental Programs or from the Central Office of the Association.

CURRICULUM LEADING TO THE CERTIFICATE IN DENTAL ASSISTING

(Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction.")

First Semester	Cr. Hrs.	Second Semester	Cr. Hrs.
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Psych 101, Soc 101 **OR** Sp Com 101	3	DH 110 Oral Anatomy	3
DH 100 Orientation	2	H Ec 125 Food for Man	3
DH 111L Dental Anatomy	2	H Ed 164 First Aid	2
DA 121L Intro Dent Sciences	3	DA 122L Adv Dent Science	3
DA 131L Prin of Dent Assisting	2	DA 132L Practicum in Dent Assisting	3
	15		17

A student who cannot type is required to take a 1-semester course in typing the first semester.

DENTAL HYGIENE

OPPORTUNITIES IN DENTAL HYGIENE

Dental Hygiene is a health service profession with the emphasis on prevention of dental diseases. A dental hygienist is educated to provide dental services to patients under the supervision of a dentist. These services include: cleaning patients' teeth, teaching patients home care of their mouths, examining patients' teeth and charting findings for the dentists' inspection, taking and developing dental x-rays, applying topical fluorides, assisting the dentists with routine office duties, speaking on dental health to groups, helping in community health programs.

The demand for the services of dental hygienists is great in private dental office practice. An Associate graduate is prepared for this type of employment and is considered a clinical dental hygienist. A dental hygienist with a bachelor's degree may be employed as a clinical dental hygienist or may choose to work as a

dental health educator or to teach in a dental hygiene school. The financial rewards vary with the type of employment and the community standards. Incomes of dental hygienists compare favorably with those in similar health professions.

QUALIFYING TO PRACTICE

An Associate degree in Dental Hygiene entitles its recipient to take the licensing examinations in dental hygiene in all 50 states, the District of Columbia, and Puerto Rico. A student enrolled in the baccalaureate degree program will be qualified for such examinations on completion of the third year of the curriculum. All dental hygienists must have licenses in the states in which they wish to practice.

STUDENT LOANS, SCHOLARSHIPS AND AWARDS

Student loans are available from the New Mexico Dental Association. Recipients of loans must have been residents of New Mexico for 10 years and must be enrolled in the Dental Hygiene Program at the time application for loan is made.

The New Mexico Dental Association awards scholarships to dental hygiene students when funds are available.

Various scholarships are available to dental hygiene students through the American Dental Hygienists' Association. Students who have completed their first year of training are eligible. Students in all the dental hygiene programs in the United States compete for these scholarships. Information concerning application for them is available from the Director.

John K. Phelan Essay Award in Clinical Dental Hygiene. Two cash awards presented annually to graduating dental hygiene students for the best essays submitted on subjects relating to the clinical practice of dental hygiene.

See "Scholarships and Awards" section, pp. 128-147 for other financial assistance.

ADMISSION

Both the associate and the baccalaureate degree offerings are open to those students who meet the admission requirements as described under "Admission" and who are selected by the Admissions Committee of the Program.

Prospective dental hygiene students should have two units of high school science, preferably Biology and Chemistry. In addition, they should include in their high school courses a variety of subject areas so that they have a well-rounded background. Students applying to either program will be accepted on the basis of scholarship, aptitude, and interest.

The American Dental Hygienists' Association, in cooperation with the Council on Dental Education of the American Dental Association, conducts an aptitude testing program for applicants to dental hygiene schools. Testing periods are in May, November, and February of each year. There are various testing centers in the Western States, one of which is Albuquerque. An application for the test can be obtained from the Dental Hygienists' Association, 304 East 45th Street, New York, New York 10017 or from the office of the Dental Programs. Reports on test scores are sent directly to the dental hygiene schools indicated by the applicant.

The deadline date for receipt of applications and credentials required for the Dental Hygiene Program is **March 1.** All requirements for admission must be fulfilled by this date. Communications **regarding entrance** to the Dental Hygiene

Program should be **addressed to the Dean of Admissions** of the University of New Mexico. The applicant should make an appointment directly with the **Director of the Dental Hygiene Program for a personal interview** before the deadline date. The Admissions Committee of the Dental Hygiene Program selects the class for the following September during the month of March. The Office of Admissions of the University notifies the applicant of acceptance or non-acceptance.

Freshman students with no previous college work will be admitted to the University College for the first year's work in dental hygiene. Students with 26 hours or more of acceptable college-level work will be admitted to the College of Pharmacy. **Application for transfer to the College of Pharmacy can be made only after notification of acceptance as a dental hygiene student.** No transfers from other schools of dental hygiene can be accepted in the Associate degree program.

It should be pointed out that the first year of the degree offering is comparable to the first year requirements of many majors. It is expected that some beginning freshmen will decide on dental hygiene after having registered in courses. In this event, it is possible for a student to qualify for entrance into the Dental Hygiene Program in the sophomore year. Such a student's individual situation will be considered by the Dental Hygiene Admissions Committee.

Beginning freshmen electing the degree program will be expected to complete the first year's work with a minimum grade-point index of 2.5 to be eligible for admission to the professional courses in their second year. These individuals and those applicants to the baccalaureate degree program who have already earned a certificate or an Associate degree must meet the March 1 deadline for completion of their credentials.

EXPENSES

In addition to tuition, housing, and school supplies, students in the Dental Hygiene Program are required to purchase instruments, clinical supplies, and uniforms. The approximate cost of these expenses for the 2-year program is $500-600; cost for the degree program is $750-850.

The Dental Hygiene Program at the University of New Mexico participates in the Student Exchange Program operated by the Western Interstate Commission for Higher Education, under which legal residents of Western States without a professional school in this field pay the same tuition and fees at this institution as residents of the State of New Mexico. To be certified as eligible for this program, the student must write to the WICHE certifying officer in his home state who will send the proper application forms. State eligibility requirements vary, and the number of students included from each state depends upon appropriations by the state legislature. For addresses of state certifying officers, write to the Western Interstate Commission for Higher Education, Fleming Law Building, Boulder, Colorado.

Dental hygiene students are eligible for junior membership in the national organization, the American Dental Hygienists' Association.

PROGRAM FOR ASSOCIATE OF SCIENCE DEGREE IN DENTAL HYGIENE

Facilities limit each class to 24 students. Students are selected by the Admissions Committee in the month of March and are admitted in the fall semester only.

Dental hygiene students should be capable of maintaining high scholastic standards; if a dental hygiene student withdraws after starting the program, the place in the class cannot be filled by a student transferring from another field of study.

Requirements for Admission are:

1. Admissibility to the University of New Mexico as described in bulletin (refer to "Admission").
2. Personal interview before March 1.
3. Satisfactory scores in Dental Hygiene Aptitude Test.

It is the responsibility of each applicant to arrange for the aptitude test and the personal interview.

Every dental hygiene student must be admissible to the College of Pharmacy when the third semester of the two-year program has been completed. This means that a grade point average of 2.0 or better is required before a student can enter the final semester of the curriculum.

REQUIREMENTS FOR THE ASSOCIATE OF SCIENCE DEGREE

The candidate must:

1. Complete all of the work outlined in the curriculum below.
2. Maintain a grade average of at least 2.0 in the last 66 hours of college-level work attempted at The University of New Mexico.
3. Be unanimously recommended by the full-time Dental Hygiene Program Faculty.

CURRICULUM

(Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction.")

First Year

First Semester		Second Semester	
Engl 101 Wrtg w/Rdgs in Expos	3	Engl 102 Wrtg w/Rdgs in Lit	3
Chem 141L Elem of Gen Chem	4	Chem 281 Org & Biochem	4
Biol 136-139L Human Anat & Physiol; Lab	5	Sp Com 101 Fund of Speech	3
or Biol 236L Paramed Anat & Physiol	4	DH 102L Clin Dental Hyg	3
DH 100 Orientation	2	DH 110 Oral Anatomy	3
DH 101L Preclin Dent Hyg	2	DH 112L Oral Radiography	1
DH 111L Dental Anatomy	2		
	17 or 18		17

Second Year

Biol 233L Paramed Microbiol	4	Soc 101 Intro to	3
Psych 101 Gen Psych 1	3	Pharm 276 Prin of	3
DH 200L Integ Dental Hyg	3	H Ec 325 Nutrition	3
DH 210L Histology	2	DH 202L Integ Dental Hyg	4
DH 220L Dental Materials	2	DH 212 Pathology	2
DH 230 Oral/Dent Medicine	2	DH 222 Dent and Pub Hlth Ed	2
DH 240 Dental Hygiene Seminar	0	DH 242 Practice Mgt & Ethics	1
	16		18

PROGRAM FOR BACHELOR OF SCIENCE DEGREE IN DENTAL HYGIENE

This degree offering is available to beginning students and to licensed dental hygienists. All prospective students should be aware that they can and **must** qualify

for dental hygiene licensure before they enter the final year of the degree offering. Before enrolling in courses in the College of Education they must pass that college's screening criteria and fulfill its teacher education requirements.

Licensed dental hygienists who wish to return to school to earn a degree in dental hygiene must meet these requirements:

1. Completion of an associate degree or certificate program in dental hygiene at an accredited school with no less than 60 transferable credits and a grade point average of 2.5 or better on a 4 point system.
2. Written recommendation from director of dental hygiene school in which applicant completed original work. UNM associate degree recipients are excepted.
3. Written certification from a dentist-employer attesting to length of employment with him. (Minimum of 120 days a prerequisite for DH 420L.) Form is available from Dental Programs office.
4. Records of medical and dental examination within past three months. Forms are available from Dental Programs office.
5. Personal interview if residence of applicant is within 500 mile radius of Albuquerque.
6. Pass College of Education screening criteria.
7. Fulfill College of Education requirements for admission to teacher education.

DEGREE REQUIREMENTS

The degree of Bachelor of Science in Dental Hygiene is granted upon completion of all specified requirements. These are:

1. Completion of 131 semester hours as outlined in the curriculum.
2. A 2.0 scholarship index in all hours attempted at the University of New Mexico.
3. At least a 2.4 grade point average in all dental hygiene courses.
4. Unanimous recommendation by the full-time Dental Hygiene Program Faculty.

CURRICULUM LEADING TO THE BACHELOR OF SCIENCE DEGREE IN DENTAL HYGIENE

(Descriptions of the courses offered will be found, listed by departments, in the catalog section "Courses of Instruction.")

First Year

First Semester		Second Semester	
Biol 121L Prin	4	Biol 122L Prin	4
Biol 136-139L Human Anat—Physiol; Lab or	5	Chem 281 Org & Biochem	4
Biol 236L Paramed Anat & Physiol	4	Engl 102 Wrtg w/Rdgs in Lit	3
Chem 141L Elem of Gen Chem	4	Soc 101 Intro to	3
Engl 101 Wrtg w/Rdgs in Expos	3	Sp Com 101 Fund of Spch	3
	15 or 16		17

Second Year

First Semester		Second Semester	
Biol 233L Paramed Microbiol	4	Com Ds 302 Intro to Spch Path	3
or Biol 393L Gen Bact		DH 102L Clin Dent Hyg	3
Psych 101 Gen Psych I	3	DH 110 Oral Anatomy	3
Sp Com 280 Sci Bases of Spch	3	DH 112L Oral Radiography	1
DH 100 Orientation	2	§Electives	6
DH 101L Preclin Dent Hyg	2		
DH 111L Dental Anatomy	2		
	16		16

Third Year

Ed Fdn 300 Hum Growth & Dev	3	Pharm 276 Prin of Phmcol	3
Ed Fdn 310 Learning in Classroom	3	Sec Ed 361 Pre-stu Tchg Exp	6
H Ec 325 Nutrition	3	DH 202L Integ Dent Hyg	4
DH 200L Integ Dent Hyg	3	DH 212 Pathology	2
DH 210L Histology	2	DH 222 Dent & Pub Hlth Ed	2
DH 220L Dent Materials	2	DH 242 Prac Mgt & Ethics	1
DH 230 Oral/Dent Med	2		
DH 240 Dent Hyg Seminar	0		
	18		18

Fourth Year

Sec Ed 461 Student Tchg	3	Biol 408 Genetics	3
Sp Com 277 Disc & Leadership Trng	3	or Biol 412L Comp Embry of Vert (4)	
or 315 Problems of Interpers Comm		or Biol 416L Histology (4)	
DH 400 Seminar	2	or Biol 454L Path Bact (4)	
DH 410 Dent Hlth Ed Methods	3	or Biol 326L Physiol of Exercise	
DH 420L Adv Clin Dent Hyg	3	Guid 431 Theories of Human Interaction	3
DH 430 Intro Dent Hyg Tchg Intshp	3	DH 432 Dent Hyg Tchg Intshp	4
		§Elective	3
	17		13 or 14

§ Physical education non-professional courses are not acceptable toward electives in this curriculum.

OTHER DIVISIONS OF THE UNIVERSITY

TELEVISION PROGRAMMING

THE UNIVERSITY recognizes the potential of television as an instructional mode. Closed Circuit Television is utilized on campus as both a method of supplementing classroom instruction and as an integral part of regular class instruction.

Instruction via Closed Circuit Television is offered in a number of courses selected from residence offerings. These offerings are determined by the faculty of the colleges responsible for the courses and are recommended to the Administration through the office of the Vice President for Academic Affairs.

Courses utilizing Closed Circuit Television are produced in cooperation with the University Closed Circuit Television System—a unit of Instructional Media Services.

SUMMER SESSION

A summer session is conducted on the campus each year. (For dates, see the Calendar.) Most of the courses offered are scheduled for the full eight weeks of the session but condensed courses and workshops are available for shorter periods. The residential halls are operated during the Summer Session. For a copy of the summer Schedule of Classes and information about admission and registration procedures, tuition and fees, and housing, address the Dean of Admissions, The University of New Mexico, Albuquerque, New Mexico 87106.

DIVISION OF CONTINUING EDUCATION

EXTENSION

The Division of Continuing Education, formerly the Division of Extension, was established as a separate unit with a full-time director in 1928, and has been conducting instruction by independent study and extension class continuously since that date. On May 7, 1930, the Division of Continuing Education of the University of New Mexico became a member of the National University Extension Association, the acknowledged accrediting agency for institutions which offer instruction by correspondence or extension class.

Extension and independent study courses allow many people who are unable to attend classes in residence to pursue their educational programs. A special independent study bulletin is issued periodically giving regulations and information concerning courses offered by the Division of Continuing Education. For a copy of the **Independent Study Bulletin** and further information address the Director, Division of Continuing Education, The University of New Mexico, Albuquerque, 87106.

EXTENSION CLASSES. The University is always pleased to arrange extension classes in any community in the State. 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 Director, Division of Continuing Education. For questions concerning audit status refer to p. 159.

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 in this manner 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 additional regulations on p. 165).

COMMUNITY COLLEGE

The Community College offers a program of late afternoon, evening, and Saturday courses, both credit and non-credit, and supervises the programs of all students enrolled in the University for non-degree work. The Community College has these objectives:

1. To make it possible for adults to supplement their education along general, cultural lines or in the fields of their special interest.
2. To make it possible for employed persons who are unable to attend the regular daytime program of the University to supplement their education through the evening offerings, and thereby become more valuable in their work and as citizens.
3. To assist those mature students who cannot meet the regular admission requirements of the University to obtain some college credit while working off their admission deficiencies.

CREDIT COURSES. The standards and requirements maintained for credit courses taken in non-degree status in the Community College are the same as those required in the 4-year degree-granting colleges of the University. The instruction is carried on by members of the regular University faculty. Credits earned are recorded on the permanent academic record of the student, and subject to the restrictions set forth on p. 165 of this catalog, are applicable in the regular degree programs of the University.

NON-CREDIT COURSES. The only prerequisite necessary for the non-credit offerings is the desire to learn. Classes are open to any adult interested in further training in either professional or vocational fields, or as a means of better enjoying leisure time.

The **Community College Bulletin** listing non-credit courses offered each semester will be supplied to anyone making a request to the Director, Division of Continuing Education, The University of New Mexico, Albuquerque 87106.

THE UNIVERSITY OF NEW MEXICO—GALLUP BRANCH

The Division of Continuing Education has supervision of instruction at the Gallup Branch. For information, see Off-Campus Residence Centers below.

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. The de-

velopment of any conference, institute, or short course is, of necessity, a cooperative process, from initiation and planning through the actual operation, between a specific department of instruction on campus and the special interest group desiring the activity.

Business, professional, or lay groups interested in a series of meetings to discuss topics of special interest should contact the Director, Division of Continuing Education, 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 be glad to give all the assistance possible. Such activities as classes for illiterates, club study groups, forums, lecture series, etc., will receive special attention. Upon request, the University will make specific written suggestions for organizing any or all of these activities.

HARWOOD FOUNDATION

The Harwood Foundation, located at Taos, New Mexico, is operated in connection with the Division of Continuing Education as an extension and field center. Various credit classes are offered by extension during the academic college year whenever demand exists. A library is maintained the year around for the people of the vicinity.

CIVIL DEFENSE PROGRAM

Under contract with the Office of Civil Defense, Department of the Army, courses in various civil defense specialities are offered to the public free of charge. Courses are normally conducted, in cooperation with the State Civil Defense Office, throughout the state where there is a need to increase the civil defense operational capability in the area. Conferences on civil defense subjects are also conducted in various communities in cooperation with municipal and county officials.

OFF-CAMPUS 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 a branch college and two residence centers.

THE UNIVERSITY OF NEW MEXICO-GALLUP BRANCH

The Board of Regents of the University of New Mexico, acting through its president and administrative staff and in cooperation with the Gallup-McKinley County Board of Education, established in 1957 a residence credit center in Gallup. This center was known as the Gallup Community College and continued to offer a limited number of courses until June 1968.

The University of New Mexico-Gallup Branch began its first full-term instruction in September, 1968, under the supervision of the Division of Continuing Education. The Branch offers courses within the first two years of a baccalaureate

program, and the enrolled student should ascertain from the dean of his college which courses are applicable toward the degree he desires. In addition, the Branch offers technical and para-professional post-high school courses which are responsive to needs of the Gallup area.

Academic requirements and regulations, as well as tuition and fees, are the same at the Branch as on the main campus. In addition to its own headquarters, the Branch 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.

All communications regarding entrance to the Gallup Branch should be addressed to the Dean of Admissions, The University of New Mexico, Albuquerque, New Mexico 87106. The University requires each student to file an application for admission, to pay a $15 application fee and to have his credentials sent directly to the Dean of Admissions from the high school or college previously attended. Transcripts in the possession of students are not acceptable for entrance purposes.

THE LOS ALAMOS RESIDENCE CENTER

This Center is divided into Graduate and Undergraduate Divisions, with limited course offerings in each given during Semesters I and II. No formal courses are conducted during summer sessions.

THE GRADUATE DIVISION. 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 a properly qualified doctoral candidate to carry on research for his 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 chairman of the department concerned at the University.

THE UNDERGRADUATE DIVISION. Lower division courses are offered primarily in response to local demand. A list of courses offered in a particular semester may be obtained from the Center Director or from the Division of Continuing Education at the University.

SENIOR RESIDENCE REQUIREMENTS. Because of the wide diversity of courses offered, it is possible to complete an undergraduate major in chemistry, engineering, mathematics, or physics, provided at least 15 hours of the senior residence requirements are completed on the UNM campus in Albuquerque.

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. 189).

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.

DIVISION OF PUBLIC ADMINISTRATION

The University offers a Master of Arts degree in Public Administration to prepare students in a graduate program for careers in the public service. This program is built around a core curriculum in Public Administration, but permits a number of options for persons with special interests. The inter-departmental and multi-disciplinary nature of the program is designed to utilize all of the University's resources relating to public administration and to offer students a broad choice in professional preparation.

Course offerings within the Division are set up to provide: (1) general preparation for students seeking to enter career service at an entrance level in local, state, or federal government; (2) special preparation in the administrative and policy aspects of the public service for persons who already have achieved a subject-matter competence; and, (3) upgrading courses for persons already in the public service.

PUBLIC SCIENCE POLICY AND ADMINISTRATION. The program for advanced study in this field offers a special focus on public science policy and administration for scientists and administrators presently engaged in mid-management positions in scientific industries and agencies, and for students with some background in the fields of science, engineering, and administration.

LEGAL AND JUDICIAL ADMINISTRATION. Law students at the University who are entering their second year of legal studies may enter the program and work for both a Law degree and the Master of Arts degree in Public Administration.

For description of courses offered in Public Administration, see the "Courses of Instruction" section of this catalog. For Core Curriculum see the **Graduate School Bulletin.**

ETHNIC STUDIES

Ethnic studies have gained recognition in recent years in colleges and universities across the continent as a valid part of their curriculums. These studies focus on the realization that ethnic and cultural differences exist in our society and that to understand them is a worthwhile academic goal. At UNM courses in this field are offered through appropriate academic departments, such as History, Sociology, Anthropology, Music, etc. Course offerings, however, are coordinated by the coordinators of the three ethnic studies programs, and they are designed and conducted for students of all ethnic and social backgrounds for their mutual benefit. In addition to course offerings, each program provides student services including tutoring and counseling for its

own ethnic group, a small library of books and periodicals, and community relations activities as a bridge between the University and the black, Chicano, and Native American communities of New Mexico. Each program is headed by a coordinator and assistant coordinator and each has its own headquarters with campus addresses indicated below. Questions about any of the programs should be directed to the appropriate coordinator:

Afro-American Studies—1819 Roma Avenue N.E., Tel. 277-5644
Chicano Studies—1815 Roma Avenue N.E., Tel. 277-5029
Native American Studies—1812 Las Lomas Road N.E., Tel. 277-3917

AIR FORCE RESERVE OFFICERS TRAINING CORPS

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 pre-professional preparation for future Air Force officers. It is designed to develop selected men and women who can apply their AFROTC education to their initial activity duty assignments as Air Force Commissioned officers.

Students may enter the Air Force ROTC from any high school, college, or university. However, new students may enter the program only in the fall semester. Transfer students with an ROTC background can receive credit for previous ROTC experience and enter the program in the spring or fall semester as directed by the Director of Aerospace Studies.

Processing of new students may be accomplished by pre-registering or during the first semester of the student's freshman or sophomore years. Specifics may be obtained by contacting the Air Force ROTC staff members in Bldg. Y-1. 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. (For further information refer to the section on Military Training under "General Information," page 101 in this bulletin).

DEPARTMENT OF AEROSPACE STUDIES

THE GENERAL MILITARY COURSE (GMC). (Four-year program only). The GMC is an introduction to U.S. military forces and defense policy 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 Corps Training.

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 Corps Training. 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.

CORPS TRAINING. Corps Training 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 Semester		Second Semester	
Freshman Year			
AF ASP 100 United States Military Forces in the Contemporary World	1	AF ASP 101 United States Military Forces in the Contemporary World	1
Sophomore Year			
AF ASP 200 Introduction to Defense Policy	1	AF ASP 201 Introduction to Defense Policy	1
Junior Year			
AF ASP 300 Aerospace Power and Astronautics	3	AF ASP 301 Aerospace Power and Astronautics	3
Senior Year			
AF ASP 400 Concepts of Leadership and Management	3	AF ASP 401 Concepts of Leadership and Management	3

NAVAL RESERVE OFFICERS TRAINING CORPS

The NROTC program provides a means whereby the student can be financially assisted toward attainment of an undergraduate degree and toward service to his country as a commissioned officer in the Navy or Marine Corps.

DEPARTMENT OF NAVAL SCIENCE

Students enrolled in the NROTC Unit may be enrolled in most colleges in the University. Completion of the Naval Science requirements can constitute completion of a minor in the College of Arts and Sciences.

First Semester		Second Semester	
Freshman Year			
Nav Sc 105 Naval Ships Systems I	3	Nav Sc 106 Naval Ships Systems II	3
Prior to Senior Year			
Pol Sc 240 International Politics	3	Hist 375 Military History of the US	3
Junior Year			
Nav Sc 303 Navigation and Naval Operations	3	Nav Sc 304 Navigation and Naval Operations	3
Senior Year			
Nav Sc 407 Principles of Naval Organization and Management	3	Three hour elective	3

Marine Corps subjects, given below, are substituted by Marine Corps applicants during the junior and senior years:

	Junior Year		
Nav Sc 331 Evolution of Warfare	3	Three hour elective	3
	Senior Year		
Nav Sc 431 Amphibious Warfare	3	Nav Sc 407 Principles of Naval Organization and Management	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:

(a) Students majoring in chemistry, engineering, mathematics, physics, or education with a teaching major in mathematics or physical science must complete two semesters of calculus and two semesters of chemistry or physics.

(b) Students majoring in other fields may substitute for the above requirements one semester of mathematics, one semester of statistics and probability, two semesters of biological/earth sciences, and one semester of computer 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 699. 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 699, graduate and professional, normally open to students enrolled in the Graduate School only, the School of Law, or the School of Medicine.

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:

**—available for graduate credit except for graduate majors in the department.
*—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.
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.
[ ]—former course number or title.
( )—semester hours' credit; credit hours separated by a hyphen (1-3) indicates variable credit in the course.
†—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.)
< >—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.**

The departments and fields of study (with abbreviations, if used) are arranged in alphabetical order in accordance with the table below:

Accounting—Acct (See Business and Administrative Sciences)
Aerospace Studies—AF ASP
American Studies— Am St
Anthropology—Anth
Applied Music—Ap Mus (See Music, Applied)
Architecture—Arch
Art
Art Education—Art Ed (See Education, Art)
Art History—Art Hi (See Art, History)
Art Studio—Art St (See Art, Studio)
Astronomy—Astr (See Physics & Astronomy)
Biology—Biol
Business and Administrative Sciences—B&AS
Business Education—Bus Ed (See Education, Secondary)

Chemical Engineering—Ch E (See Engineering, Chemical)
Chemistry—Chem
Chemistry, Pharmaceutical—Phm Ch (See Pharmacy)
Civil Engineering—CE (See Engineering, Civil)
Classical Languages (See Modern & Classical Languages)
Classics (See Modern and Classical Languages)
Clinical Science—Clin S (See Medical Sciences)
Communicative Disorders—Com Ds
Comparative Literature—Comp L
Computing and Information Science
Curriculum & Instruction—C&I (See Eduaction, Curriculum & Instruction)
Dance (See Theatre Arts, Dance)
Dental Assisting—DA
Dental Hygiene—DH
Economics—Econ
Economics-Philosophy—Ec-Ph
Education, Art—Art Ed
Education, Business—Bus Ed (See Education, Secondary)
Education, Curriculum & Instruction—C&I
Education, Educational Administration—Ed Adm
Education, Educational Foundations—Ed Fdn
Education, Elementary—El Ed
Education, Guidance & Special Education—G Sp E
Education, Health, Physical Education, & Recreation
Education, Home Economics & Home Economics Education—H Ec & H Ec Ed
Education, Industrial—I Ed (See Education, Secondary)
Education, Library Science—Lib Sc
Education, Music—Mus Ed (See Music Education)
Education, Physical—PE (See Health, Physical Education & Recreation)
Education, Secondary—Sec Ed
Educational Administration—Ed Adm (See Education, Educational Administration)
Educational Foundations—Ed Fdn (See Education, Educational Foundations)
Educational Media (See Education, Educational Media)
Electrical Engineering and Computer Science—EE&CS (See Engineering, Electrical and Computer Science)
Elementary Education—El Ed (See Education, Elementary)
Engineering—Engr
Engineering, Chemical—Ch E
Engineering, Civil—C E
Engineering, Electrical and Computer Science—EE&CS
Engineering, Mechanical—ME
Engineering, Nuclear—Nucl E
English—Engl
English-Philosophy—Eng-Ph
Film (See Theatre Arts, Film)
Fine Arts—FA
French (See Modern & Classical Languages)
General Studies—Gen St
Geography—Geog
Geology—Geol
German (See Modern & Classical Languages)
Greek (See Modern & Classical Languages)
Guidance—Guid (See Education, Guidance & Special Education)
Health Education—H Ed (See Education, Health, Physical Education & Recreation)
History—Hist
Home Economics & Home Economics Education—H Ec & HEc Ed (See Education, Home Economics)
Ibero-American Studies—Ib Am
Industrial Education—I Ed (See Education, Secondary)
Institutional Pharmacy—Ins Ph (See Pharmacy)
Italian—Ital (See Modern & Classical Languages)
Journalism—Journ
Latin (See Modern & Classical Languages)
Latin American Studies—Lt Am
Law
Library Science—Lib Sc (See Education, Educational Media)
Linguistics and Language Pedagogy—Ling
Mathematics & Statistics—Math
Mechanical Engineering—ME (See Engineering, Mechanical)
Medical Biology—Med Bi (See Medical Sciences)
Medical Laboratory Science—Md Lab (See Medical Sciences)
Medical Sciences—Med Sc (See Medical Sciences)
Modern & Classical Languages—M Lang
Music and Music Education—Mus & Mus Ed
Navajo—Nava (See Modern & Classical Languages)
Naval Science—Nav Sc
Nuclear Engineering—Nucl E (See Engineering, Nuclear)
Nursing—Nurs
Paleoecology—Paleoe
Pharmaceutical Chemistry—Phm Ch (See Pharmacy)
Pharmacognosy—Phmcog (See Pharmacy)
Pharmacology—Phmcol (See Pharmacy)
Pharmacy—Pharm
Pharmacy Administration—Phm Ad (See Pharmacy)
Pharmacy, Institutional—Ins Ph (See Pharmacy)
Philosophy—Phil
Philosophy-Economics (See Economics-Philosophy)
Philosophy-English (See English-Philosophy)
Physical Education—PE (See Education, Health, Physical Education & Recreation)
Physical Science—Phy Sc
Physics—Physcs (See Physics and Astronomy)
Physics & Astronomy

Political Science—Pol Sc
Portuguese—Port (See Modern & Classical Languages)
Psychology—Psych
Public Administration—Pub Ad
Quechua—Qechua (See Modern & Classical Languages)
Recreation—Recrea (See Education, Health, Physical Education, & Recreation)
Russian—Russ (See Modern & Classical Languages)
Russian Studies
Secondary Education—Sec Ed (See Education, Secondary)
Sociology—Soc
Spanish—Span (See Modern & Classical Languages)
Special Education—Spc Ed (See Education, Guidance and Special Education)
Speech (See Communicative Disorders or Speech Communication)
Speech Communication— Sp Com
Statistics (See Mathematics & Statistics)
Swahili—Swahli (See Modern & Classical Languages)
Theatre Arts—TA
Undergraduate Seminar Program—USP (See General Studies)

ACCOUNTING

See Business and Administrative Sciences.

AEROSPACE STUDIES

Darvel L. Sumner, Lt Col, USAF, Director; Edmund P. Palko, Lt Col, USAF, Assistant Director.

CURRICULUM

See p. 294.

010. 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.

100-101. United States Military Forces in the Contemporary World. (1, 1)
A study of the doctrine, mission, and organization of the United States Air Force; U.S. strategic offensive and defensive forces; their mission and functions; employment of weapons systems, aerospace defense; missile defense; U.S. general purposes and aerospace support forces; the mission, resources, and operation of tactical air forces, with special attention to limited war; review of Army, Navy, and Marine general purpose forces.

200-201. Introduction to Defense Policy. (1, 1)
Defense organization: Organization and functions of Department of Defense and role of the military in U.S. national policies; theories of general war; nature and context of limited war; Soviet strategies and policies, Chinese strategies and policies; role of allegiances in U.S. defense policies; the elements and processes in the making of defense policy.

300-301. Aerospace Power and Astronautics. (3, 3)
Critical analysis of the development of air power and aerospace power to include doctrine, technology, organization, and the utilization of manned and unmanned aircraft and space vehicles. Evolution and evaluation of U.S. space programs. Review of main characteristics of the solar system, types of orbits, and trajectories. Examination of current and planned capabilities for space operations. In each semester, students will take field trips, participate in group discussions, and prepare oral and written reports. <Fall 1973 and Spring 1974, and alternate years>

400-401. Concepts of Leadership and Management. (3, 3)
Theory and application of leadership concepts to Air Force situations. Review of the Military Justice System. Theory and practice of Air Force management to include information systems, quantitative approaches to decision-making, and resource control techniques. In each semester, students will take field trips, prepare oral and written reports and participate in group discussions, case studies, and problem-solving exercises. <Fall 1972 and Spring 1973, and alternate years>

AMERICAN STUDIES

COMMITTEE IN CHARGE: ASSOCIATE PROFESSOR Joel M. Jones (English), Chairman; PROFESSORS G. Arms (English), B. Bunting (Art), W. M. Dabney (History), D. B. Hamilton (Economics), P. F. Schmidt (Philosophy), E. W. Tedlock (English); ASSOCIATE PROFESSORS H. V. Rhodes (Political Science), F. Szasz (History).

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. Requirements for the doctor's degree in American Studies are listed in the ***Graduate School Bulletin.***

MINOR STUDY

The requirement is 24 hours, including 9 hours in American Studies courses (Am St 285, 301, 302) and 15 hours in approved courses in literature, history, or social science. With the approval of the chairman of the major department, options within the major may permit the election of additional courses in the American area (normally 9 hours in all within the major). Since courses counted toward a major cannot also be counted toward a minor, requirements vary somewhat according to the student's major department. Though the minor appears quite prescriptive, **adaptations and substitutions can be made** in response to each student's particular needs and interests. In addition to 9 hours in American Studies, some of the approved courses are:

For majors in Anthropology, Economics, Political Science, or Sociology:

6 hours in literature or history (normally chosen from English 300 or 400 level courses; Hist 361 through 379); 6 hours in a social science other than the major (normally from Anth 305, 308, 357, 358, 404; Econ 320, 350, 360; Pol Sc 306, 368, 375; Soc 441, 445, 461); 3 hours in Phil 332 or Art Hi 472, or any courses of a comparable nature.

For majors in Art History and Criticism or in Philosophy:

6 hours in literature or history (as above); 6 hours in a social science (as above); 3 hours in Phil 332 (for majors in Art) or in Art Hi 472 (for majors in Philosophy).

For majors in English:

6 hours in history (as above); 6 hours in a social science (as above); 3 hours in Phil 332 or Art Hi 472.

For majors in History:

6 hours in literature (as above); 6 hours in a social science (as above); 3 hours in Phil 332 or Art Hi 472.

For other majors:

People having other majors will need the special approval of both their major adviser and the American Studies office.

285. American Life and Thought. (3) Baughman, Jones, Remley
Important themes and issues of our society (1607 to the present), as reflected in American literature. <Fall, Spring>

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 Transcendentalists") 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>

497. Individual Study. (1-3 hrs. per semester, to a maximum of 9)‡ Jones

***501. Interdepartmental Seminar in the Culture of the United States. (3)‡**
Civil War period; the formation of an American view during the early national period, 1775-1828; American society and painting, 1918-1941; pragmatism, realism, and naturalism —a comparative exploration of the literary and philosophical traditions at the turn of the century. <Summer, Fall, Spring>

***606. Approaches to Interdisciplinary Methodology. (3)** Jones
Prerequisite: permission of instructor.

***651. Individual Study. (1-3 hrs. per semester, to a maximum of 12)‡** Jones
For Ph.D. candidates only.

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ANTHROPOLOGY

PROFESSORS, J. M. Campbell (Chairman), H. W. Basehart[2], P. K. Bock, L. R. Binford, F. C. Hibben[3], R. H. Lister, K. R. Schwerin, B. Spolsky, G. P. Springer, J. N. Spuhler; ASSOCIATE PROFESSORS J. J. Brody, B. J. Rigsby; ASSISTANT PROFESSORS R. A. Barrett, L. S. Cordell, P. Draper, J. W. Froehlich, H. C. Harpending, W. J. Judge, S. Rhine, J. M. Sebring, C. A. Smith, M. M. Weigel.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

Anth 101, 102, 493 and 27 additional semester hours in courses numbered from 200 through 499 within the department. Anthropology courses are offered in four major divisions: archaeology; general ethnology; linguistics; and physical anthropology. A limited number of courses are also offered in the technical division. A student must concentrate in one of the four major divisions and take a minimum of 9 semester hours in it. In each of the three remaining major divisions, he must take at least 3 semester hours. No more than 3 semester hours of field courses may be applied toward the fulfillment of the requirements in any one division, nor may more than 6 semester hours of field courses be applied toward the entire anthropology major. Upper division courses from other departments chosen with the approval of the Chairman of this department are acceptable as electives toward the major in anthropology.

MINOR STUDY

17 hours in addition to Anth 101 and 102, and at least 6 hours to be taken in courses numbered above 300. No more than 3 semester hours of Field courses may be applied toward the minor.

DISTRIBUTED MINOR FOR ANTHROPOLOGY MAJORS. With the consent of the Department Chairman, a major may offer an American Studies minor as well as a minor in a single department. For requirements, see American Studies.

ANTHROPOLOGY, GENERAL

101. Origin and Antiquity of Man. (3)
Introductory course dealing with the physical origins of man and the development of human culture as revealed by archaeology. <Summer, Fall, Spring>

102. Development of Culture. (3)
The concept of culture as exemplified by contemporary peoples. <Summer, Fall, Spring>

275F. General Field Session. (2-6)
Introductory summer field course in archaeology, linguistics, or general ethnology. <Summer only>

***402. American Indian Art I.** (3) Brody
(Also offered as Art 402) Prehistoric and historic art forms of the Arctic Northwest Coast, Southwest and Western regions. <Offered upon demand>

***403. American Indian Art II.** (3) Brody
(Also offered as Art 403) Prehistoric and historic art forms of the Plains, Sub-Arctic and Eastern regions. <Offered upon demand>

***422. Education and Anthropology.** (3)
(Also offered as Ed Fdn 422.) An overview of educational implications from the field of anthropology. <Offered upon demand>

***475F. Advanced Summer Field Session.** (2-6)
For upper-division and graduate students. Field course in archaeology, linguistics, or general ethnology. An advanced course that includes intensive instruction in field techniques and the opportunity for independent research on the part of the student. Prerequisite: 275F or equivalent. <Summer only>

***493. History of Anthropology.** (2) Basehart
The development of anthropological theory from the 19th century to the contemporary period, with major emphasis on cultural anthropology. Limited to majors and minors in anthropology. <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 interest and field research opportunities. Students are expected to work under minimal supervision and to produce publishable reports. Prerequisite: permission of staff. <Offered upon demand>

***505. Proseminar: Introduction to Research.** (3)
Methods and techniques of collecting and analyzing data and of writing scientific reports. Limited to graduate majors. <Fall>

***509. Seminar: Anthropological Theory.** (3)
Intensive analysis of selected problems and theories, both historical and contemporary, in anthropology. Limited to graduate majors. <Fall>

***511. Advanced Research.** (3)
Individual research projects in archaeology, general ethnology, or linguistics. Limited to graduate majors. <Offered upon demand>

General prerequisites: Anth 101 and 102 or equivalent.

ANTHROPOLOGY, PHYSICAL

***307L. Anthropology of the Skeleton.** (3)
A laboratory course in the identification of human skeletal materials with attention to problems in the evolution of the primates. 2 lectures, 2 hrs. lab. <Offered upon demand>

***388. Human Genetics.** (3)

***450. Physical Anthropology.** (3) Spuhler
The biological organization of past and present primate and human properties. <Fall>

***451. Biology, Society, and Culture.** (3) Spuhler
The biological bases of behavior, social behavior of the non-human primates, and the evolution of human behavior. <Spring>

***452. Human Population Genetics.** (3) Spuhler
The conditions for stability and change in gene and genotype frequencies in human breeding populations. <Spring 1973 and alternate years>

***455. Human Evolution.** (3)
History of the discovery of man's fossil ancestors, site-by-site summary of findings, and distribution of known fossils in space and time. Anatomical consistencies and inconsistencies between the various forms, and consideration of the evolutionary significance of various hominid characteristics. The potential for survival amongst bipeds as cultural

animals. The significance of carrying, tool-making and a comparison to survival potential of arboreal primates. Prerequisite: 450.

*456L. **Human Evolution Laboratory.** (1) Rhine
Lab will provide opportunity for familiarization of student with the nature of the evidence, and an opportunity to make direct metrical and morphological comparisons using fossil cast material. Students are expected to sign up for laboratory section concurrent with lecture, but are not required to do so. <Spring 1972>

*488. **Quantitative Methods in Anthropology.** (3) Spuhler

*510. **Seminar: Physical Anthropology.** (3) Spuhler
Specific topics related to problems in human biology. Prerequisite: graduate status. <Spring 1973 and alternate years>

*550. **Advanced Physical Anthropology.** (5) Spuhler
The advanced study of the biological organization of past and present primate and human populations. <Spring>

ARCHAEOLOGY

§266F. ***Archaeological Field Techniques.*** **(2)** Brody
An introduction to site surveying, excavation techniques, field conservation, cataloging principles and techniques, field mapping, and site reporting. <Offered upon demand>

*312. **European Prehistory.** (3) Hibben
The archaeological backgrounds of Europe and contiguous areas in the Mediterranean, Africa, and Asia from earliest times to the historical period. <Spring 1973 and alternate years>

*355. **Southwestern Archaeology: Mogollon and Hohokam.** (3) Judge
The development of the various branches of Mogollon and Hohokam cultures, from Southwestern Desert Culture roots; influences from Mexico are examined. <Fall>

*356. **Southwestern Archaeology: Pueblo Area.** (3) Judge
The development of Basket Maker-Pueblo culture through its periods and regional branches from a combination of Southwestern Desert Culture roots and borrowed traits. <Spring>

*362. **Archaeology of the Old World.** (3) Hibben
Prehistory of Africa, Asia, and Oceania with emphasis on Egypt, Mesopotamia, India, and China. In each area the prehistoric sequence is brought up to historic times. <Fall 1972 and alternate years>

*384. **Archaeology of Mexico, Central America, and the West Indies.** (3) Hibben
Prehistoric beginnings of human culture from the appearance of man in the New World to the Spanish Conquest. Emphasis is on the Valley of Mexico, the Mayan area, and contiguous regions. <Fall 1972 and alternate years>

*385. **American Archaeology: North America.** (3) Hibben
Prehistory of the North American continent from the first appearance of man in America to the European contact period. The American Southwest and Mexico are excluded. <Spring 1973 and alternate years>

*386. **American Archaeology: South America.** (3) Hibben
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. <Offered upon demand>

*391. ***Classical Archaeology.*** (3) Hibben
Cultural beginnings of Greece, Rome, and associated cultures in the Mediterranean area from the Neolithic period to the Byzantine empire. <Fall 1973 and alternate years>

*392. **Strategy of Archaeology.** (3) Binford
An upper division introduction to the purpose and theory of the study of archaeology; relates archaeology to anthropological principles and the practice of science. <Fall 1973 and alternate years>

*507. **Seminar: Archaeological Theory and Method.** (3)‡
The approaches and strategies of the study of archaeology with an emphasis on methodological rather than technical procedures. <Spring>

*514. **Seminar: South American Archaeology.** (3)
Readings, group discussions, and presentation of a research paper on aspects of South American prehistory. <Offered upon demand>

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§ No prerequisite.

*516. **Seminar: European Prehistory.** (3) Hibben
Individual and group discussion of the cultural backgrounds of European archaeology, with special reference to recent developments in the field. <Spring 1973 and alternate years>

*557. **Seminar: Early Man in the New World.** (3) Hibben
Special readings and discussion of various aspects of Paleo-Indian problems. <Offered upon demand>

*582. **Seminar: American Archaeology.** (3)‡ Binford, Campbell, Hibben, Judge
Detailed readings and discussion of various aspects of North American archaeology. Special reading by each seminar member will result in a paper presented to the entire group. <Offered upon demand>

*594. **Seminar: Southwestern Archaeology.** (3) Judge
Individual research dealing with a current problem selected for group study. <Offered upon demand>

ETHNOLOGY, GENERAL

§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) Rigsby
Major culture types and selected ethnographic examples of North American Indian cultures. <Fall 1972 and alternate years>

*306. **The American Indian: South America.** (3) Schwerin
Major culture types and selected ethnographic examples of South American Indian cultures. <Fall>

*308. **Psychological Anthropology.** (3) Bock
Materials and concepts useful in understanding the influence of group culture upon personality and of the individual upon his society. <Spring 1972 and alternate years>

*310. **Peasant Cultures of the World.** (3) Barrett, Bock
An introduction to the comparative study of peasantry. Focuses on the social and economic organization of peasant societies and the relationships of these groups to the civilizations of which they are a part. <Fall 1973 and alternate years>

*314. **Latin American Culture and Societies.** (3) Barrett, Schwerin
Culture patterns common throughout Latin America and their historical antecedents. Analyses of the variations among selected Latin American societies. <Spring 1974 and alternate years>

315. **Current American Indian Problems.** (3) Wilson
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. Prerequisite: 305 or permission of instructor.

*316. **Applied Anthropology.** (3)
The application of anthropological methods and principles to problems of inter-cultural communication and social change. <Fall 1972 and alternate years>

*321. **Ethnology of Asia.** (3) Sebring
Survey of modern social structures and cultures of Asia with emphasis upon selected areas and problems. <Spring 1974 and alternate years>

*336. **Ethnology of Africa.** (3) Basehart
Cultural and social patterns characteristic of sub-Saharan Africa with special reference to problems of culture history and comparative political organization. <Fall 1973 and alternate years>

*350. **Methods in Cultural Anthropology.** (3)
Methods used in the collection and ordering of anthropological data for historical, scientific, and administrative problems. <Spring 1974 and alternate years>

*352. **Primitive Literature.** (3)
Comparative study of literature as a historical phenomenon, as a reflection of a cultural setting, as a formal expression for aesthetic purposes; examples drawn from oral literature. <Fall 1972 and alternate years>

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§ No prerequisite.

***357. Southwestern Ethnology: Non-Pueblo Peoples. (3)**
The cultures, and relationships of Pima, Papago, Yaqui, Tarahumara, Seri, Yumans, Navajos, and Apaches. <Fall>

***358. Southwestern Ethnology: Pueblo Peoples. (3)**
The origin, social organization, material culture, and relationships of Southwestern Pueblo tribes. <Spring>

***361. Social Implications of Technological Change. (3)** Barrett
(Also offered as Soc 361.) The impact of technological change on societal institutions with special attention to underdeveloped areas. Prerequisite: Soc 101 or equivalent.

***365. Urbanization in Latin America. (3)**
(Also offered as Soc 365.) Analyzes the processes related to urbanization in Latin America, comparing them with developments following industrialization and rural-to-urban migrations elsewhere. Emphasis on social and cultural changes accompanying rural-to-urban migration. Prerequisite: Soc 101 or equivalent.

***369. American Indian History. (3)**
(Also offered as Hist 369.) Survey of American Indian history from white contact to the present. <Fall>

***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>

***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 the modern theories. <Fall 1973 and alternate years>

***397. Music in Society. (3)** Springer
Examinations of the functions of music in tribal and modern society; tools of analysis; survey of selected samples of musical culture. Prerequisite: ability to read simple music. <Fall 1973 and alternate years>

***398. Primitive Religion. (3)** Barrett
Selected examples of non-literate religions. Special emphasis on revitalization or nativistic movements which develop in acculturative situations.

***399. Comparative Value Systems. (3)** Sebring
A comparative treatment of values, world 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 1973 and alternate years>

***404. Comparative Social Structure. (3)** Basehart
A systematic comparative analysis based upon the intensive study of a limited number of social systems. Primarily for graduate students. <Offered upon demand>

***460. Seminar in Museology and Museography. (3)** Brody
(Also offered as Art 460) Practical and theoretical work in specific museum problems. Prerequisite: 304L or 380L, or Art 400, or permission of instructor.

***506. Cultural Ecology. (3)** Campbell
Analysis of cultural technological adaptations to environment in cross-cultural perspective. <Spring 1974 and alternate years>

***508. Processes of Culture Change. (3)** Basehart
Analysis of contemporary anthropological approaches to problems of social and cultural change. <Spring 1973 and alternate years>

***512. Seminar: Ethnology. (3)‡**
Specific topics related to problems in the interpretation of ethnological data. <Fall, Spring>

***513. Anthropological Problems in Latin America. (3)**
Analyses of current anthropological problems in the area. <Spring 1973 and alternate years>

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler, Schwerin
(Also offered as Econ, Hist, Ib-Am, Lat Am, Pol Sc, and Soc 584.) <Spring>

***595. Seminar: Southwestern Ethnology.** (3)
Individual research related to a current problem selected for group study. <Fall 1972 and alternate years>

***610. Kinship Studies.** (3) Basehart
An introduction to the forms and variations of kinship systems. <Fall 1972 and alternate years>

LINGUISTICS

292. Introduction to the Study of Language. (3 or 4)
(See Ling 292.)

***313L. Linguistic Field Methods.** (3)
Practice in transcribing from oral dictation, phonemic analysis, introduction to problems of morphology. 2 lectures, 2 hrs. lab. <Offered upon demand>

***317L. Phonological Analysis.** (3) Rigsby
Phonetic principles and phonological theory, descriptive analysis of phonological systems, transcriptional practice and problems from selected languages. 2 lectures, 2 hrs. lab. <Fall>

***354. The Nature of Language.** (3) Spolsky
Introduction to modern descriptive linguistics, principles of comparative linguistics, language as a social and psychological phenomenon. <Fall>

***359. Language and Culture.** (3) Rigsby, Spolsky
An examination of the interrelations of language and speech with other selected aspects of culture. Prerequisites: 317L, 354, or equivalent. <Spring>

***405. North American Indian Languages.** (3) Rigsby, Spolsky
Introduction to the study of North American native languages and survey of contemporary speech communities; intensive examination of the structure of one or more Southwestern native languages. Prerequisite: 292 or 354, or equivalent. <Fall>

***418L. Grammatical Analysis.** (3) Rigsby
A continuation of 317L. Principles of grammatical analysis and the theory of grammar, descriptive analysis of grammatical structures, problems from selected languages. 2 lectures, 2 hrs. lab. <Spring 1974 and alternate years>

***446. Introduction to Comparative Linguistics.** (3)
The comparative method applied to Indo-European and to unwritten languages; other methods and techniques used in comparing languages. Prerequisites: 313L, 317L, 354 or permission of instructor. <Spring 1974 and alternate years>

***459. Language and Society.** (3) Spolsky
An introduction to sociolinguistics, with special reference to language reflections of socio-cultural organization, multilingualism, and language planning. Prerequisite: a course in Linguistics. <Spring>

***554. Seminar: Linguistic Theory.** (3) Rigsby
Current topics and issues in phonology, syntax, or semantics. Prerequisite: 317L or 418L or equivalent. <Offered upon demand>

***555. Seminar in Linguistics and Language Pedogogy.** (1-3) Rigsby, Spolsky, Springer
(See Ling 555.)

***660. Methods of Comparative Linguistics.** (3)
Evaluation of different methods used in the comparison of languages; current trends in comparative linguistics. <Offered upon demand>

***661. Types of Linguistic Structure.** (3)
Linguistic analysis and synthesis, language as an integrated system, varieties of language structures. <Offered upon demand>

TECHNICAL

***303L. Chronology.** (3)
Methods of dating in relationship to archaeological problems. Prerequisite: permission of instructor. 1 lecture, 4 hrs. lab. <Offered upon demand>

***304L. [260L] Beginning Museology.** [Beginning Techniques and Methods] (3) Brody
An introduction to the history, philosophy, and purpose of museums. Techniques and problems of museum administration, education, collection, exhibition, conservation, and public relations. 2 lectures, 2 hrs. lab. <Fall>

***311. Material Culture.** (3)
Materials and techniques of manufacture, with emphasis on analysis and identification of the prehistoric and historic Southwestern tribes. <Offered upon demand>

380L. [360L] Advanced Museology. [Advanced Museum Techniques and Methods] (3) Brody
Specialized work on a sub-curatorial level in one area of anthropology, art, or folk art. Emphasis on conservation, cataloging, and interpretation of collection materials to the public. Prerequisite: 304L. 2 lectures, 2 hrs. lab. <Spring>

***409L. Southwestern Pottery.** (3)
Prehistoric pottery types of Mogollon and Pueblo cultures: *identification* and relationships. Prerequisites: 355 and 356 or permission of instructor. 2 lectures, 2 hrs. lab. <Spring 1973 and alternate years>

***489. Computer Models in Anthropology.** (3)
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.

INDIVIDUAL STUDIES

***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.

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ARCHITECTURE

PROFESSORS D. P. Schlegel (Chairman), B. Bunting, R. Cohlmeyer; ASSOCIATE PROFESSORS R. Anderson, V. D. Hooker, M. L. Pillet; ASSISTANT PROFESSORS J. Borrego, R. Eichorn, R. Nordhaus; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

CURRICULA

See p. 247.

101. Introduction to Architecture. (3)
An introduction to the idea of building form as a product of social, perceptual, and technological determinants. <Fall, Spring>

104. Visual Communications. (3)
Problems in visual analysis with emphasis on observation, recording, and communication techniques. Lectures, laboratory, and shop work. <Fall, Spring>

161. The City. (3)
(Also offered as Soc 161) Discussion of the interrelations of the physical form and the social, economic, political, and cultural life of the contemporary city. <Fall>

181. Introduction to Environmental Problems. (3)
Major issues and areas of concern involved in the relation of man to his physical environment. <Fall, Spring>

201. Design I (3)
Introduction to design methods with emphasis on analysis, systems, space manipulation, and integration of basic functional form determinants. Prerequisite: sophomore standing. <Fall>

202. Design II. (3)
Continuation of 201. Prerequisite: 201. <Spring>

261. Ancient and Medieval Architecture. (3) Bunting <Fall>

262. **Renaissance and Baroque Architecture.** (3) Bunting <Spring>

°301. **Design III.** (4)
Exploration of the issues and determinants of environmental design. Design methods will be applied to a wide range of environmental problems. Prerequisite: 202. <Fall>

°302. **Design IV.** (4)
Continuation of °301. Prerequisite: °301. <Spring>

*338. [372] **The City in History.** [History of Urban Development] (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.

361. **Architecture Since 1750.** (3) Pillet <Fall>

362. **Problems in Theory and Criticism.** (3) <Spring>

°385. **Building Technology I.** (3)
Analysis of the building process. <Fall>

°386. **Building Technology II.** (3) Schlegel
Integration of building systems. <Spring>

°401. **Design V.** (4)
Options in architecture, planning, and environmental studies based on individual and joint projects common to the options. Prerequisite: °302. <Fall>

°402. **Design VI.** (4)
Continuation of °401. <Spring>

429. **Problems.** (1-6)‡ <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.

462. **Seminar.** (2)‡
Individually listed topics each semester. <Fall, Spring>

*465. **City Planning Methods.** (3)
(Also offered as Econ, Pol Sc, and Soc 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 multi-discipline introduction to urban studies with emphasis on planning and control. <Fall>

*466. **Economics for City Planning.** (3)
(Also offered as Econ 466) This course introduces quantitative methods of city and development planning. Topics include cost-benefit analysis, including heroic quantification and social physics (simultaneous design of transportation and land use). Prerequisite: Econ 201. <Spring>

*471. **American Architecture.** (3) Bunting
History of American architecture from the 17th century to World War II. <Spring>

*472. **Regional Planning.** (3)
Normative studies at regional scale integrating social science and physical design methods. <Spring>

*497. **Social Planning Seminar.** (2)‡
Consequences of social and cultural change on design and planning. Prerequisite: senior standing. <Fall, Spring>

*498. **Social Planning Studio.** (6)‡
Architectural and planning services to minority groups in New Mexico carried on through the Design and Planning Assistance Center. Corequisite: 497. <Summer, Fall, Spring>

499. **Comprehensive Review.** (8)‡
A studio which presents the architectural undergraduate curriculum in one academic year. Prerequisite: for graduate students in architecture with degrees from other disciplines. <Fall, Spring>

*501. **Studio Workshop.** (6)
Directed group or individual assignments in architecture, community design, or environmental science. **May be repeated to a total of 12 hours.** <Fall, Spring>

° Open only to students enrolled in the professional curriculum in architecture.

***551. Problems. (1-3)**
Research in architectural, planning, and environmental problems. **May be repeated for a maximum of 12 hours.** <Fall, Spring>

***562. Seminar. (2)‡**
Individually listed topics each semester. <Fall, Spring>

***581. Architectural Research and Programming Methods.** [Architectural Programming] **(2)** Schlegel
<Fall, Spring>

***598. Thesis Research and Programming. (6)**
Prerequisite: 581.

***599. Thesis. (1-6)**
Prerequisite: 598. <Summer, Fall, Spring>

ART

PROFESSORS L. Lehrer (Chairman), C. Adams (Dean), G. Z. Antreasian, B. Bunting, V. D. Coke, J. Kacere[5], C. Mattox, C. E. Paak, S. D. Smith; VISITING PROFESSOR B. Newhall; ASSOCIATE PROFESSORS R. Ellis, M. Howard, R. W. Lewis, B. Manley, H. Nadler; M. E. Smith, P. Walch; ASSISTANT PROFESSORS J. Abrams, J. Conway, D. George, G. Johnson, G. Keimig, J. N. Kraft; INSTRUCTOR W. R. Lazorik; ADJUNCT PROFESSOR E. Boyd; LECTURERS V. Guyler (part-time), M. Hoppin, A. Noggle (part-time), H. D. Rodee, D. Rosenzweig (part-time); and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

1. For the student enrolled in the College of Fine Arts, a 70-hour major offered under the Pre-professional Curriculum leads to the degree of B.F.A. (See curriculum, p. 248).

2. For the student enrolled in the College of Fine Arts, a 48-hour major offered under the General (Liberal Arts) Curriculum leads to the degree of B.A. in Fine Arts. (See curriculum, p. 249).

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 History is as follows:
20 hours in Art History courses, including 270, 271, and 272; and
12 hours in Studio courses, including 123.

MATERIALS AND STUDENT WORK

Students enrolling in art courses furnish their own material except 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 several pieces of original work with the department.

ART (STUDIO)

102. Painting (3)‡ S. D. Smith
Painting for non-majors. <Fall, Spring>

123. Studio Fundamentals. (6)
Basic aspects of two and three dimensional phenomena including drawing and color theory. <Fall, Spring>

205. Drawing I. (3)‡‡
Descriptive drawing with emphasis on the structural properties of line, volume, and tonality. Prerequisite: 123 or equivalent. <Fall, Spring>

207. Painting I. (3)
Basic instruction in materials, techniques, composition, and color theory. Prerequisite: 123 or equivalent. Corequisite: 205. <Fall, Spring>

213. Sculpture I. (3)
Introduction to various sculptural ideas and materials. Prerequisite: 123 or equivalent. <Fall, Spring>

257. Beginning Jewelry and Metalwork. (3)‡‡
The handworking of various metals. Prerequisite: 123 or equivalent. <Fall, Spring>

268. Beginning Ceramics (3)‡‡
Ceramic techniques. Prerequisite: 123 or equivalent. <Summer, Fall, Spring>

277. Graphic Design. (3) Kraft
(Also offered as Journ 277) Problems of graphic design and communication. Prerequisite: 123. <Fall>

287. Photography I. (3)
Introductory course in still photography. <Summer, Fall, Spring>

293. Beginning Watercolor Painting. (3)‡‡ S. D. Smith
Fundamentals of watercolor painting. Emphasis on the landscape. Prerequisite: 123 or equivalent; corequisite: 205. <Offered upon demand>

305. Drawing II. (3)‡‡
Drawing as an independent medium or as a foundation for painting, sculpture, lithography, or crafts. Prerequisite: 205. <Fall, Spring>

306. Drawing III. (3)‡‡
Preparation of individual technical and intellectual resources for advanced level course work. Prerequisite: 305. <Fall, Spring>

307. Painting II. (3)‡‡
Esthetic ideas as applied to painting concepts. Prerequisite: 207. <Fall, Spring>

308. Painting III. (3)‡‡
The refinement of technical and intellectual resources for individual creative pursuits. Prerequisite: 307. <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)‡‡
Relationships of various materials to specific conceptual problems. Prerequisite: 213. <Fall, Spring>

314. Sculpture III. (3)‡‡
Continuation of 313. Prerequisite: 313. <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
Experimental approaches to ceramics. Prerequisite: 268. <Summer, Fall, Spring>

374. Lithography. (3)‡‡ Antreasian
Techniques and methods of lithography. Prerequisite: 305. <Fall, Spring>

386. Photography II. (3)‡‡
Continuation of 287 with concentration on photographic techniques and the development of personal vision. Prerequisite: 287; corequisite: 123. <Fall, Spring>

387. Photography III. (3)‡‡
Further development of personal concepts of photographic vision. Prerequisite: 386. <Fall, Spring>

388. Cinematic Photography. (3)‡‡ Lazorik
Basic study of film-making. Prerequisite: 287 or Journ 261. <Fall, Spring>

‡‡ Instructor and department chairman must approve repetition of this course. May be taken for credit no more than two times.

389. Photo Communications. (3)‡
Concentrated practical and historical study of specific concerns in photography. Prerequisite: 386. <Offered upon demand>

°*405. **Advanced Drawing.** (3)††
Drawing as an expressive medium and as a vehicle for developing advanced conceptual theories in the visual arts. Prerequisite: 306. <Fall, Spring>

*406. **Computer Graphics.** (3)†† Mattox
Generalized course for developing graphic images by electronic computer and electronic plotter. <Offered upon demand>

°*407. **Advanced Painting.** (3)††
Investigation of individual problems based on a thorough knowledge of materials and methods. Prerequisite: 308. <Fall, Spring>

*408. **Advanced Landscape Painting.** (3)‡‡ S. D. Smith
Landscape painting in various media. Prerequisites: 305, 307. <Offered upon demand>

*409. **Electrical Circuits, Devices, and Systems.** (3) Williams
(Also offered as EE&CS 409.) Theoretical and practical survey of electrical circuits, devices, and systems intended primarily for majors in the visual arts. <Fall>

°*413. **Advanced Sculpture.** (3)†† Mattox
Investigation of individual problems based on a thorough knowledge of materials and methods. Prerequisite: 314. <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) Christman
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) Christman
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: 387. <Fall, Spring>

°*487. **Advanced Photography.** (3)††
Advanced concepts of photography as applied to the development of personal expression. Prerequisites: 386 and 387. <Fall, Spring>

*488. **Advanced Cinematic Photography.** (3)‡ Lazorik
Continuation of 388. Prerequisite: 388 and permission of instructor. <Fall, Spring>

*493. **Seminar: The Visual Arts.** (1)††
Criticism for advanced and graduate students in painting, scultpure, lithography, photography, and crafts. **No more than 2 hrs. of credit may be counted toward a graduate degree.** <Fall, Spring>

*495. **Tutorial Critique.** (1-6)†† Lehrer
Advanced criticism of specifically directed individual problems. Prerequisite: 6 hours 300 level courses with 3.0. <Fall, Spring>

*499. **Senior Thesis.** (3) Lehrer
Directed study in the major field, culminating in a written thesis or exhibition. Open to students by faculty invitation only. <Spring>

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‡‡ Instructor and department chairman must approve repetition of this course. May be taken for credit no more than two times.

° Enrollment will be limited to students who have earned a 3.5 grade average in 6 hrs. (or 3.0 grade average in 9 hrs.) of the 300 level prerequisite noted in the course description. Transfer students must present a satisfactory portfolio to the department faculty in lieu of this requirement.

***505. Projects in Drawing.** (3)‡
Directed individual assignments. <Fall, Spring>

***507. Projects in Painting.** (3)‡
Directed individual assignments. <Fall, Spring>

***513. Projects in Sculpture.** (3)‡
Directed individual assignments. <Fall, Spring>

***551-552. Problems.** (2-3 hours each semester to a maximum of 6)
Graduate work in projects or fields not covered in the regular catalog courses.

***557. Projects in Jewelry and Metalwork.** (3)†† Lewis
Directed individual assignments. <Fall, Spring>

***568. Projects in Ceramics.** (3)†† Paak
Directed individual assignments. <Fall, Spring>

***574. Projects in Lithography.** (3 or 6)‡ Antreasian
Prerequisite: 474 or permission of instructor <Fall, Spring>

***587. Projects in Photography.** (3)‡
Directed individual assignments. <Fall, Spring>

***598. Final Project.** (3) Lehrer
A directed specific project done as the conclusion of studio work for the M.A. under Plan II. Prerequisite: advancement to candidacy. <Fall, Spring>

***699. Dissertation.** (3-9 hrs. per semester) Lehrer
See the Graduate School Bulletin for total credit requirements. <Fall, Spring>

ART HISTORY

101. Art Appreciation. (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>

270. History of Art I. (3) Bunting
Introductory study of Prehistoric, Near Eastern, Egyptian, Greek, Roman, Early Christian, Byzantine and Romanesque Art. <Fall, Spring>

271. History of Art II. (3)
Introductory study of Western Art from the beginning of the Gothic period to the end of the Renaissance. <Fall, Spring>

272. History of Art III. (3) George
Introductory study of Western Art from the beginning of the Baroque period to 1874. <Fall, 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) Rosenzweig
A study of selected examples of Chinese and Japanese Art. <Spring>

***304L. Beginning Museology.** (3) Brophy
(See Anth 304L.)

***320.** [401] **African and Oceanic Art.** (3) M. E. Smith
Art of Africa and Oceania. <Fall 1972 and alternate years>

***340.** [411] **Pre-Columbian Art.** (3) M. E. Smith
Art of Middle America prior to the 16th century. <Fall>

***350.** [430] **Greek and Roman Art.** (3) Guyler
History of painting and sculpture from 1800 B.C. to the 6th century A.D. <Offered upon demand>

***360.** [440] **Medieval Art** (3) Bunting
Survey of architecture, painting, and sculpture from the dissolution of the Roman empire to the 16th century, with emphasis on the religious art forms of the 12th and 13th centuries. <Fall 1973 and alternate years>

***370.** [420] **History of the Graphic Arts.** (3) Hoppin
Drawing and printmaking from the 13th century to the present. <Fall>

***380L. Advanced Museology.** (3) Brophy
(See Anth 380L.)

***400. Museum Practices.** (3)
Practical and theoretical work in museum practices such as registration, conservation, exhibition, and cataloging works of art. <Spring>

***402. American Indian Art I.** (3) Brody
(Also offered as Anth 402.) Prehistoric and historic art forms of the Arctic Northwest coast, Southwest, and Western regions. <Offered upon demand>

***403. American Indian Art II.** (3) Brody
(Also offered as Anth 403.) Prehistoric and historic art forms of the Plains, Sub-Arctic and Eastern regions. <Offered upon demand>

***425. 19th Century Photography.** (3) Newhall
Consideration of the historical development and esthetic character of photography in the 19th century. <Fall>

***426. 20th Century Photography.** (3) Newhall
Historical development and esthetic character of photography in the 20th century. <Spring>

***450. Spanish Colonial Art.** (3) M. E. Smith
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>

***451. Fifteenth and Sixteenth Century Art in Italy.** (3) Bunting
Painting and sculpture from the late 14th century through Mannerism. <Fall 1973 and alternate years>

***452. Fifteenth and Sixteenth Century Art in Northern Europe.** (3) Rodee
Painting and sculpture from the late 14th century through Mannerism. <Fall 1972 and alternate years>

***460. Seminar in Museology and Museography.** (3) Brody
(Also offered as Anth 460) Practical and theoretical work in specific museum problems. Prerequisites: Anth 304L or 380L, or Art 400, and permission of instructor.

***461. Seventeenth and Eighteenth Century Art in Italy.** (3)
Painting and sculpture during the Baroque and Rococo periods. <Spring 1974 and alternate years>

***462. Seventeenth and Eighteenth Century Art in Northern Europe.** (3)
Painting and sculpture in France, Germany, the Low Countries, and England during the Baroque and Rococo periods. <Fall 1972 and alternate years>

***471. Hispanic Art.** (3) M. E. Smith
Survey of Hispanic art in Europe. <Fall>

***472. Art of the United States.** (3) George
History of painting and sculpture from colonial times to 1906. <Fall>

***479. American Art: 1906-1940.** (3) George
History of painting and sculpture from 1906 to the beginning of World War II. <Spring>

***481. Nineteenth Century Art.** (3) Coke, Rodee
History of painting and sculpture from the late Rococo period through Impressionism. <Fall>

***482. Foundations of Modern Art.** (3) Rodee
History of painting and sculpture from Post-Impressionism to World War I. <Spring>

490. Interdepartmental Proseminar. (3) Honors Staff
(See FA 490) <Fall>

***491. 20th Century Art.** [Later 20th Century Art] (3) Walch
History of painting and sculpture from World War I to the present. <Fall>

***494. Problems in Art History.** (2-3)
Course work determined by specific student request or by professor's current research. <Offered upon demand>

496. Tutorial. (3)
Individual investigation or reading under faculty direction. <Fall, Spring>

499. Senior Thesis. (3)
Directed study in the major field, culminating in a written thesis. Open to students by faculty invitation only. <Spring>

***500. Bibliography and Research.** (3) Bunting, George
Bibliography and research techniques in the study of art history. <Spring>

***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)
Graduate work in projects or fields not covered in the regular courses. **Maximum 6 hours.** <Fall, Spring>

***560. Problems in Pre-Columbian Art or African Art or Oceanic Art.** (3)‡ M. E. Smith
Reading knowledge of Spanish is required for Pre-Columbian Art. <Fall>

***561. Problems in Ancient and Medieval Art.** (3)‡
<Offered upon demand>

***571. Problems in Renaissance and Baroque Art.** (3)‡
<Spring>

***572. Problems in the Art of the United States.** (3)‡ George, Hoppin
<Fall>

***580. Problems in Spanish Colonial Art.** (3) Boyd
Prerequisites: 450 and reading knowledge of Spanish. <Fall>

***581. Problems in 19th Century Art.** (3)‡ Rodee
<Fall, Spring>

***582. Problems in 20th Century Art.** (3)‡ Adams, Newhall, Walch
<Fall, Spring>

***592. Art Since 1950.** (3) Adams, Walch
Critical study of aspects of art since 1950. <Spring>

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements. <Fall, Spring>

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements. <Fall, Spring>

BIOLOGY

PROFESSORS P. Silverman (Chairman), H. J. Dittmer, J. S. Findley, C. C. Hoff, W. J. Koster, W. C. Martin, L. D. Potter, M. L. Riedesel; ASSOCIATE PROFESSORS J. W. Beakley, C. S. Crawford, W. G. Degenhardt, G. V. Johnson, W. W. Johnson, D. E. Kidd, J. D. Ligon, M. L. Rosenzweig; ASSISTANT PROFESSORS E. W. Bourne, D. W. Duszynski, J. R. Gosz, P. R. Kerkof, G. L. Traut; ASSOCIATES C. M. Bogert, R. Holland, U. C. Luft, P. B. Sears; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

B.S. Degree: (recommended for professional biologists and for those entering graduate programs and professional fields such as medicine). Biol 121L and 122L; two courses from the three following groups with no two from the same group although additional courses from any of the three groups may be used as electives: (botanical 363L or 372L), (zoological 371L or 386L), (microbiological 393L); 429L; 407; 408 and 409L; 400; plus 8 hours of biology electives. Total biology 37 hours. Math 150-151 or 162 or 180 and 181; Chem 101L-102L or 121L-122L, and 281 or 301-303L; Physcs 151 and 152. (For those interested in microbiology, physiology, or medicine, Chem 301-303L and 302-304L are recommended.) Grades of "C" or better are required of Biology majors in all of the above courses.

B.A. Degree: (available for biology majors in Education or in Arts and Sciences obtaining a teaching certificate and others in a liberal arts program). Biol 121L-122L; two courses from the three following groups with no two from the same group although additional courses from any of the three groups may be used

as electives: (botanical 363L or 372L), (zoological 371L or 386L), (microbiological 393L); 429L; 407, 408, and 409L; plus 12 hours of biology electives. Total biology 39 hours. Math 150-151 or 162 or 180 and 181; Chem 101L or 121L and 281 or 301-303L. Grades of "C" or better are required of biology majors in all of the above courses.

A student desiring to concentrate in some special field of biology such as bacteriology, botany, ecology, physiology, or zoology, should consult an appropriate staff member early in his college career.

MINOR STUDY

Biol 110-111 or 121L-122L and 12 additional hours. Grades of "C" or better are required in biology courses used for a minor. Note: Biol 110-111 does not satisfy prerequisite requirement for most advanced courses.

MINOR STUDY IN PALEOECOLOGY

See p. 473.

CURRICULA PREPARATORY TO DENTISTRY, FORESTRY, MEDICAL TECHNOLOGY, OR MEDICINE

See pp. 186-189.

Note: Credit will be allowed for only 110-111 or 121L-122L; for only 233L or 393L; for only 136-139L or 236L or 429L or 430L.

110. Life Science for Non-Majors. (3) Traut
An introduction to the study of the fundamental concepts of biology. Social implications are stressed, chemical and molecular aspects are de-emphasized. 3 lectures. <Fall>

111. Life Science for Non-Majors. (3) Traut, Dittmer
Continuation of Biology 110. Emphases on ecology and man's integral relationship with and responsibility to his environment. Prerequisite: 110. 3 lectures. <Spring>

121L. Principles of Biology. (4) Kidd
Molecular basis of life and cell theory. Emphasis on development of ideas rather than descriptive aspects. 3 lectures, 3 hrs. lab. <Fall>

122L. Principles of Biology. (4) Kidd
Heredity, development, and evolution. Prerequisite: 121L. 3 lectures, 3 hrs. lab. <Spring>

136. Human Anatomy and Physiology. (3) Bourne
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>

139L. Human Anatomy and Physiology Laboratory. (2)
Laboratory work in elementary anatomy and physiology with emphasis on anatomy. Cannot be taken independently of 136. 3 hrs. lab. <Fall>

233L. Paramedical Microbiology. (4) Beakley
Introduction to microbiology, with emphasis on principles of infection and immunity. Prerequisites: 121L and Chem 101L or 141L. Not accepted toward a biology major. 2 lectures, 6 hrs. lab. <Fall>

236L. Paramedical Anatomy and Physiology. (4) Bourne
Principles of anatomy and physiology as applied to man. Prerequisites: 122L, Chem 281. Not accepted toward a biology major. 3 lectures, 3 hrs. lab. <Spring>

***324. Introduction to Biological Chemistry.** (3)
(See Chem 324.) <Spring>

326L. Physiology of Exercise. (3) Riedesel
Physiological processes and their relation to exercise. Prerequisite: 122L and 136 or 236L. 2 lectures, 3 hrs. lab. <Summer, Fall>

***363L. Flora of New Mexico.** (4) Martin
Identification, classification, and nomenclature of vascular plants. Field trips required. Prerequisite: 122L. 3 lectures, 3 hrs. lab. <Fall>

***371L. Invertebrate Zoology.** (4) Hoff
Evolution; morphology; and complementarity of structure, environment, and function of the invertebrates. Prerequisite: 122L. 2 lectures, 4 hrs. lab. <Summer, Fall, Spring>

***372L. Plant Morphogenesis.** (4) Dittmer
Unity, diversity, and organogenesis in the plant kingdom. Prerequisite: 8 hrs. in Biol. 3 lectures, 3 hrs. lab. <Spring>

***386L. General Vertebrate Zoology.** (4) Findley, Ligon
Principles of classification, ecology, behavior, and speciation of the vertebrates. Prerequisite: 122L. 3 lectures, 3 hrs. lab. <Summer, Spring>

***393L. General Bacteriology.** (4) Beakley, Booth
Taxonomy, anatomy, physiology, and ecology of bacteria; principles of bacteriological technics, sterilization, and host-parasite relationships. Prerequisites: 122L, 8 hrs. of Chem. Chem 301-303L recommended. 2 lectures, 6 hrs. lab. <Summer, Fall, Spring>

400. Senior Seminar. (2)
(Offered each semester, cannot be repeated for credit). <Fall, Spring>

***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. <Spring>

***407. Concepts of Ecology.** (3) Potter, Gosz
Interrelationships of physical and biotic environments. Prerequisite: 16 hrs. of Biol or instructor's permission. <Fall, Spring>

***408. Genetics.** (3) W. Johnson
Structure, function, and transmission of hereditary factors. May be taken with, or independently of, 409L. Prerequisite: 122L. <Summer, Fall, Spring>

***409L. Genetics Laboratory.** (1) W. Johnson
Genetic principles using the fruit fly and lower organisms. May not be taken independently of 408 without permission of instructor. 3 hrs. lab. <Fall, Spring>

***411L. Population Biology.** (4) Rosenzweig
Evolutionary mechanics; population and evolutionary ecology. Prerequisites: 408-409L and one semester of calculus. 3 lectures, 3 hrs. lab. <Spring>

***412L. Comparative Embyrology of the Vertebrates.** (4) Koster
Prerequisites: 122L and 4 hours of 300- or 400-level courses. 2 lectures, 6 hrs. lab.<Fall>

***414L. General Entomology.** (4) Crawford
Biology and classification of the insects. Prerequisite: 122L. 2 lectures, 4 hrs. lab. <Fall>

***415L. Insect Ecology.** (4) Crawford
Concepts of population and physiological ecology of terrestrial arthropods with special reference to insects. Prerequisite: 414L; 407 recommended. 3 lectures, 3 hrs. lab. <Spring 1973 and alternate years>

***416L. Histology.** (4) Bourne
Microscopic structure of vertebrate tissues, emphasizing correlation of structure and function. Prerequisites: 122L and 4 hrs. in Biol. 2 lectures, 4 hrs. lab. <Fall>

***417. Cytology.** (3) Bourne
Study of plant and animal cells. Prerequisite: 429L. <Spring>

421L. Comparative Vertebrate Anatomy. (5) Ligon
Prerequisites: 122L and 371L or 386L. 2 lectures, 6 hrs. lab. <Spring>

***429L. Cellular Physiology.** (4) Kerkof
Life processes with emphasis on relationships of structure and function at organelle and molecular level. Prerequisites: 16 hrs. Biol, Chem 281 or 301-303L, Math 121 or 150 or 162 or 180 and 181. 3 lectures, 3 hrs. lab. <Fall, Spring>

***430L. Vertebrate Physiology.** (5) Riedesel
Functions and structures with emphasis on fundamental physiological processes and mechanisms. Prerequisite: 429L. 4 lectures, 3 hrs. lab. <Spring>

§435L. Teaching of Biology. (3) Degenhardt
(See Sec Ed 435L.)

***443L. Comparative Physiology.** (4) Riedesel
A comparison of physiological processes with emphasis on osmoregulation, nutrition, and metabolism. Prerequisites: 371L, 430L or 478L. Organic chemistry recommended. 3 lectures, 3 hrs. lab. <Spring 1973 and alternate years>

***454L. Pathogenic Bacteriology.** (4) Beakley
The properties and characteristics of disease-producing bacteria and their relationship to disease. Prerequisites: 393L and Chem 281 or 301-303L. 2 lectures, 6 hrs. lab. <Summer, Fall>

***456L. Immunology.** (4) Beakley
Principles of antigen-antibody reaction, hypersensitivity, and auto-immune diseases. Laboratory preparation, detection, and measurement of antibodies. Prerequisites: 393L and Chem 302-304L. Chem 324 recommended. 2 lectures, 6 hrs. lab. <Spring>

***460L. Physiology of Bacteria.** (4) Booth
Cytology; growth and reproduction; fermentation, respiration, and other enzymatic activities of bacteria. Prerequisites: 393L, 429L, and Chem 281 or 301-303L. 3 lectures, 3 hrs. lab. <Spring>

***473L. Mycology and Plant Pathology.** (4) Kidd
A taxonomic study of the fungi, with some consideration of the causative factors and economic aspects of plant diseases. Prerequisite: 122L and 363L or 372L or 393L. 2 lectures, 4 hrs. lab. <Fall>

***474L. Plant Anatomy.** (4) Martin
Structure of vascular plants. Prerequisites: 122L and 363L or 372L. 2 lectures, 4 hrs. lab. <Spring 1973 and alternate years>

***475L. Pharmacology I.** (4)
(See Pharm 475L.) Not allowed for undergraduate Biology credit. <Fall>

***476L. Pharmacology II.** (5)
(See Pharm 476L.) Not allowed for undergraduate Biology credit. <Spring>

***477. Economic Botany.** (3) Dittmer
Plants of economic importance throughout the world, geographic distribution, relation to world economy, and population distribution. Prerequisite: 8 hrs. in Biol or junior status. <Fall>

***478L. Plant Physiology.** (4) G. Johnson
Nutrition, metabolism, and growth of higher plants. Prerequisite: 429L. Chem 301-303L recommended. 3 lectures, 3 hrs. lab. <Spring>

***479. Environmental Conservation.** (3) Dittmer
The effects of overpopulation on the earth's natural resources and prospects for the future. Lecture, demonstration, field trips. Prerequisite: 8 hrs. in Biol or junior status. <Summer, Spring>

***481L. Medical Entomology.** (3) Hoff
The insects and arachnids of importance in human and veterinary medicine. Emphasis in the laboratory on identification. Prerequisites: 122L and 8 additional hrs. in Biol. 2 lectures, 2 hrs. lab. <Spring 1973>

***482L. Parasitic Protozoa and Helminths.** (4) Duszynski
The protozoa and worms important in human and veterinary medicine. Emphasis on the structure and life cycle of various forms, with practice in laboratory identification. Prerequisite: 371L. 416L recommended. 2 lectures, 4 hrs. lab. <Fall>

***484L. Limnology.** (4) Koster
Fresh-water habitats and aquatic invertebrates with special reference to problems of productivity. All-day field trips required. Prerequisite: 122L. 3 lectures, 3 hrs. lab. <Spring 1974>

***486L. Ornithology.** (4) Ligon
Classification, phylogeny, natural history and literature of birds. Early morning field trips required. Prerequisites: 386L or permission of instructor. 3 lectures, 3 hrs. lab. <Fall>

***487L. Ichthyology.** (4) Koster
Classification, phylogeny, natural history and literature of fishes. All-day field trips required. Prerequisite: 122L. 3 lectures, 3 hrs. lab. <Spring 1973 and alternate years>

***488L. Herpetology.** (4) Degenhardt
Classification, phylogeny, natural history, and literature of reptiles and amphibians. All-day and one or more overnight field trips required. Prerequisite: 122L. 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. <Fall 1973>

***490L. Histological Technique.** (3) Duszynski
The preparation for microscopic examination of plant and animal structures, tissues, and cells. Additional emphasis on topics of special interest to individual students. Prerequisites: 122L, and permission of instructor. 1 lecture, 4 hrs. lab. <Spring>

***491L. Radiobiology.** (4) Kerkof, G. Johnson
Properties of radiation; principles, theory, and use of detection and counting instruments; radioisotopes as tracers in biological experiments. Prerequisites: 429L, Physcs 151-153L, Chem 281 or 301-303L. One year of organic chemistry recommended. 2 lectures, 6 hrs. lab. <Fall>

***492L. Radiobiology.** (4) Kerkof, G. Johnson
Interaction of radiation with matter; biologic effects of radiation; radiation syndrome; relative radiosensitivity of cells, organs, and organisms; health physics and practical applications of radiation. Prerequisite: 491L; pre- or corequisites: Physcs 152-154L. One year of organic chemistry recommended. 3 lectures, 3 hrs. lab. <Spring>

499. Undergraduate Problems. (1-3)
Permission of instructor required. Maximum of 6 hrs. credited toward a biology major or minor.

***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>

***503. Research Procedures** (2) Koster
The basic techniques used in exploring biological literature, in planning experiments, in making and recording observations, and writing the report. Prerequisite: 16 hours in Biol. <Fall, Spring>

***504. Environmental Physiology.** (3) Riedesel
Principles of physiological limits and adaptations in relation to environmental stresses. Prerequisites: 430L, Math 121 or 150 or 162 or 180 and 181, Physcs 151-153L, or permission of instructor. <Fall>

***508L. Advanced Invertebrate Zoology.** (4) Hoff
Emphasis on the phylogeny of invertebrate groups, principles of comparative morphology and embryology. Prerequisite: 371L. 2 lectures, 4 hrs. lab. <Spring 1974>

***509. Advanced Genetics.** (3) W. Johnson
Detailed consideration of hereditary material, transfer of genetic information, and evolution and integration of genetic systems. Prerequisite: 408. <Spring 1973 and alternate years>

***510. Genetics of Speciation.** (3) W. Johnson
Factors affecting the genetic composition of populations. Prerequisite: 408. <Spring 1974>

***511L. Insect Physiology.** (4) Crawford
Physiology of terrestrial arthropods with special reference to insects. Prerequisites: 414L, 429L, and Chem 281 or 301-303L. 3 lectures, 3 hrs. lab. <Spring 1974>

***525. Fundamental Concepts of Biology.** (3) Kidd
Trend of scientific thought and method from earliest times to the present; emphasis on historical origin and philosophical aspects of evolution and ecology. Prerequisite: 16 hrs. in Biol. <Spring>

***551. Problems.** (2-3)††

***552L. Advanced Parasitic Protozoology.** (4) Duszynski
Emphasis on structure, life histories, classification, immunological and pathological aspects of protozoan parasites of vertebrates. Prerequisites: 371L, 416L, 482L or permission of instructor. 2 lectures, 4 hrs. lab. <Spring 1974>

***554L. Advanced Mammalogy.** (4) Findley
Recent advances and special topics in Mammalogy. Prerequisite: 489L. 3 lectures, 3 hrs. lab. <Fall 1972 and alternate years>

***555. Animal Behavior.** (3) Ligon
Evolutionary origins and trends of major behavioral patterns, with special reference to vertebrates; innate and learned components of behavior. Prerequisites: 386L and 430L or permission of instructor. <Fall>

***556L. Animal Behavior Laboratory.** (1) Ligon
Special laboratory and field projects in animal behavior. Optional. To be taken with, or subsequent to, 555. 3 hrs. lab. <Fall>

***557. Theoretical Ecology.** (3) Rosenzweig
Detailed examination of ecological models and deductions. Current literature. Prerequisites: 411L and Math 163 or equivalent. 3 lectures. <Fall>

***563L. Advanced Plant Taxonomy.** (4) Martin
Experimental approach to plant systematics, application of nomenclatural code, and mechanics of monographic studies. Prerequisites: 408 and 363L. Recommended: 407, 474L, and 478L. 2 lectures, 6 hrs. lab. <Spring 1974>

***571L. Physiological Plant Ecology.** (4) Gosz
Ecological significance of the physiological response of plants to environment. Prerequisite: 407 or 478L. 3 lectures, 3 hrs. lab. <Fall>

***572L. Ecology of North American Vegetation.** (4) Potter
Ecology of origin, use, and productivity of North American plant communities. Prerequisite: 407. 3 lectures, 3 hrs. lab. <Spring>

***593L. Plant Mineral and Water Relations.** (4) G. Johnson
Absorption and utilization of minerals and water with emphasis on problems of semi-arid lands. Prerequisite: 478L. 2 lectures, 6 hrs. lab. <Fall 1973>

***594L. Plant Metabolism and Growth.** (4) G. Johnson
Advanced treatment of photosynthesis, respiration, and hormonal control of growth. Prerequisite: 478L. 2 lectures, 6 hrs. lab. <Fall 1972 and alternate years>

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

***651F. Advanced Field Biology.** (4-8)
Professional field research experience or attendance at a recognized field biological station. Approval of Committee on Studies required.

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

BUSINESS AND ADMINISTRATIVE SCIENCES

PROFESSORS R. R. Rehder (Dean), E. H. Caplan, R. L. Edgel, H. V. Finston, W. H. Huber, P. T. Mori, W. S. Peters, D. M. Slate, L. G. Winter; ASSOCIATE PROFESSORS K. Christman, R. H. Jehenson, R. Lenberg; ASSISTANT PROFESSORS A. A. Blumenfeld, R. A. Reid, D. G. Simonson, W. A. Shinnick, W. R. L. Taylor, J. A. Yeakel; VISITING LECTURERS M. Haney, P. A. Smyer, D. T. Francis (part-time), M. I. Mondlick (part-time), D. D. Royer (part-time), A. Roark (part-time), and new appointments to be made.

CURRICULA

See pp. 192-200.

200-201. Principles and Problems; Principles of Economics. (3, 3)
(See Econ 200-201.)

202. [105, 106] **Introduction to Accounting.** [Fundamentals of 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.

225. Accounting for Management Control. (3)
Interpretation, use, and analysis of accounting reports and supplementary information for management planning, coordination, and control. Effects of taxation and price levels on administrative decisions. The application of various theories and concepts which underlie cost accounting and budgeting. Prerequisite: 202. 225 must be completed prior to admission to the second semester of the junior year. Students failing to meet this requirement will substitute 384 for 225. <Fall, Spring>

290L. Business Statistics Laboratory. (1)
Application of probability and statistics in business. Co-requisite: Math 102. <Fall, Spring>

305. Introduction to International Business. (3) Winter
Will provide an understanding of international business operations—the managerial and operational problems of a global enterprise and focus on socio-economic differences. Structure and functions of a world-wide organization. Emphasis to global business decision-making. Prerequisite: Econ 200. <Fall>

306. Man, Society, and Law. (3) Huber
An intensive examination of the nature, functions and ends of law. The major philosophical schools of thought concerning the nature of man, organizations and governments discussed from a conceptual approach. Natural Law concepts beginning with the ancient Greek philosophers through the periods of Hobbes, Locke, Rousseau, Kant to contemporary views of law stressing sociological jurisprudence with emphasis on application of law to current business and social problems and the external constraints on man and decision-making which result from laws. Prerequisite: upper-division standing. <Fall>

307. Law of Contracts. (3) Huber
An intensive examination emphasizing a conceptual approach through the case method of transactions between men 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: 306 and upper-division standing. <Spring>

308. Principles of Marketing. (3) Lenberg, Slate, Winter
Designed to give the student an understanding and appreciation of the marketing process within the framework of the firm. The central purpose is to develop a comprehension of the increasingly important role of behavioral and quantitative models in developing marketing strategy in domestic and international markets. Prerequisites: Econ 200, 201. <Fall, Spring>

310. Business Finance. (3) Edgel, Mondlick, Taylor
Concerns basic principles and practices influencing the decision-making responsibility for every phase of business operation where profits and funds management are directly or indirectly concerned. Includes sources and uses of short- and long-term funds, determinants of capital requirements, methods of obtaining capital, internal financial management, application of capital and cash budgeting techniques to complex problems, and utility analysis of choices involving risk. Prerequisites: 225 or equivalent, Econ 201. <Fall, Spring>

***315. Money and Banking.** (3) Chung, Parker
(See Econ 315.)

***320. Economics of Labor Relations.** (3) Cohen
(See Econ 320.)

329. Quantitative Analysis for Management. (3) Peters, Reid, Schinnick
The application of modern quantitative methods to business problems. Includes allocation, inventory, and waiting line models, decision theory, forecasting and advanced statistical techniques. Prerequisites: 290, Math 102, and a course in data processing. <Fall, Spring>

330. Organization Theory. (3) Finston
Fundamentals of organization and management which apply not only to industrial organizations but to any enterprise involving sizeable groups of people. Study of the manager's job in setting goals and in utilizing both human and material resources to meet organization objectives. Introduction to human relations case problems. <Fall, Spring>

***332. Government Control of Business.** (3) Parker
(See Econ 332.)

340. Transportation. (3)
(See Econ 340.)

***350. Public Finance.** (3) Blumenfeld, Boyle, Therkildsen
(See Econ 350.)

363. Investment Analysis and Management. (3) Edgel
Theory and techniques basic to control of investment risks and optimization of investment returns. Includes investment media and priorities, security market operations, portfolio analysis and management, profitability analysis, planning and management of investment programs, timing of securities transactions, and the significance of financial institu-

tions as purchasers of corporate securities. Major emphasis is placed on the decision-making responsibilities of the financial manager with respect to investment analysis and management. Prerequisite: 310. <Fall>

***364. Rise of Modern Industry. (3)** Hamilton
(See Econ 364.)

366. Problems and Policies in Business Financial Management. (3) Edgel
Development of analytical and decision-making skills necessary to cope with the wide range of problems which confront the financial manager. Includes planning, directing, controlling and financing current operations as well as long-term capital commitments. General problem areas covered include internal versus external financing, internal rate of return, financing expansion of business through mergers and consolidations, and dividend policy. Emphasis is placed on the development of a policy-making framework for sound decision-making under conditions of uncertainty and risk. Prerequisite: 310. <Spring>

***373. Intermediate Accounting I. (3)**
Study of accounting theory with emphasis on asset valuation and income determination. Problems relating to the control of and the accounting for current assets. The accounting issues resulting from the corporate form of organization. Prerequisite: minimum grade of C in 202. <Fall, Spring>

***374. Intermediate Accounting II. (3)**
Continuation of 373. Problems relating to the control of and the accounting for liabilities and noncurrent assets. The analysis and interpretation of financial statements, including the impact of income taxes and changing price levels. Prerequisite: 373. <Fall, Spring>

***384. Managerial and Cost Accounting. (3)**
An investigation of the concepts and procedures involved in the development, presentation and interpretation of accounting information as an aid to management in planning and control. Topics include: usefulness and limitations of accounting data in evaluating alternative courses of action and in controlling current operations; methods of collecting costs information; problems of cost estimation and allocation; standard costs; budgeting; cost-value relationships. Prerequisite: 202. <Fall, Spring>

***410. Marketing Communication. (3)** Slate, Winter
An investigation of communications theory including market, audience, and individual behavior; relationships of communications in the marketing mix; personal and nonpersonal forms of communications including sales management and advertising; problems of determining advertising appropriations, budgets, campaign strategy, media analysis, and evaluation of the communications effort of the firm. Prerequisite: 308. <Spring>

***411. Theories of Communication. (3)** Goldhaber
(See Sp Com 411.)

***412. Organizational Communication. (3)** Goldhaber
(See Sp Com 412.)

***421. Advanced Accounting I. (3)**
Problems and theory relating to partnership dissolution and liquidation, consignments, installment sales, the statement of affairs, realization and liquidation, estates and trusts, insurance and other areas. Prerequisite: 374. <Fall>

***447. 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: 421. <Spring>

***449. Income Tax Accounting. (3)**
Federal and state income tax laws and regulations; history and background; sources of tax law; tax services; organization and procedures of the Internal Revenue Service; tax returns, rates and credits; deductions and exclusions; withholding provisions; capital gains and losses; community property clauses. Prerequisite: 374 or junior status. Credit may be obtained in 449 without continuing into 450. <Fall>

***450. Income Tax Accounting. (3)**
Continuation of 449. <Spring> Last offering Spring 1974

451-452. Problems. (1-3 hrs. each semester)†† Caplan, Edgel, Finston, Slate, Winter
Special permission of the advisor and of the Dean of the School of Business and Administrative Sciences required.

*469. **Monetary Theory and Credit Institutions.** (3) Edgel, Taylor
Study of monetary policies and their effects upon corporate financial policy, money markets, price levels, and aggregate economic growth and stability. Includes analysis of short-term money markets and forces influencing their behavior. General areas covered are commercial bank management, mortgage financing, credit institutions, and international financial management, including financial requirements, problems, sources, and policies of firms doing business internationally. Prerequisites: 310 and Econ 315. <Spring>

*483. **Marketing Research.** (3) Slate, Winter
Research methods and techniques as an aid to marketing management and the application of these tools to the process of obtaining information upon which to base marketing strategy. Prerequisites: 290, 308. <Spring>

*486. **Marketing Logistics.** (3) Slate, Winter
In this course the student considers analysis and development of an integrated distribution network. A systems approach is applied to the problems of marketing logistics. Economic analysis and quantitative tools are used in decision-making concerning the physical flow of goods. Included are warehousing and inventory planning. Prerequisites: 308, 329. <Fall>

*487. **Contemporary Accounting Topics.** (3)
An examination of selected theoretical issues related to current controversy in accounting. Prerequisite: 374. <Fall>

*490. **Methods Engineering.** (3)
(See ME 490.)

492. **Senior Seminar.** (3) Lenberg, Slate
Emphasis is placed on the specific functions of top management. A variety of case studies offers 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: 225, 329, 306, 307, 308, 310, 330, and second semester senior standing, or special permission of instructor. <Fall, Spring>

493. **Labor Law and Collective Bargaining.** (3) Finston
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. An examination of the game theory approach to collective bargaining strategy and tactics. Intensive analysis of negotiation and arbitration cases involving wages, employee discipline, seniority rights, management prerogatives, and other collective bargaining issues. Prerequisite: 330 or permission of instructor. <Spring>

*495. **Development Seminar in Small Business.** (3)
This course is offered in recognition of the important role of small firms in a dynamic economy and the great need for the initiation and effective management of such firms. The objective of the course is 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 product of small firms. Prerequisites: 307, 308, 310. <Fall, Spring>

*496. **Advanced Theory in Personnel Management.** (3) Finston
An investigation into the behavioral models underlying the instruments, their nature, administration and interpretation as used in personnel management. Implications for interviewing, testing, training, performance evaluation, and wage and salary administration. Prerequisite: 330 or permission of the instructor. <Fall>

*500. **Quantitative Analysis I.** (3) Peters, Reid
Mathematical foundations of the quantitative analysis of administrative problems. Linear systems and matrix algebra, introduction to differential and integral calculus, set theory, and probability. Applications to business and administrative situations. <Fall, Spring>

*501. **Quantitative Analysis II.** (3) Peters, Reid
Statistical methods for decision making and analysis of administrative problems. Significance tests and decision procedures, Bayesian decision theory, and multi-variate statistical methods. Applications to business and administrative situations. Prerequisite: 500 or equivalent. <Fall, Spring>

*502. **Accounting and Management Information Systems. I.** (3)
An examination of the basic concepts, principles and postulates of financial accounting theory and their relation to the objectives of income determination and asset valuation. Emphasis is on financial statements as a sourcce of economic data and investor information.

Topics include the financial accounting model, theories of valuation, data accumulation and analyses, and funds flow. <Fall, Spring>

***503. Accounting and Management Information Systems II. (3)**
The study of management information systems as collectors, generators, and processors of data. Particular emphasis on the role of accounting in management decision-making and control. Topics include budgeting, incremental analysis, planning capital expenditures, standard costs and analyses of variances, responsibility accounting, and computer-based management information systems. Prerequisite: 502. <Fall, Spring>

***504. Organizational Economics I. (3)**
Theory of buyer behavior; theory of the firm; market structures and output and price determination; value and distribution theory; capital theory; theory of income, employment, money and interest; partial and general equilibrium theory; welfare economics. <Fall, Spring>

***505. Organizational Economics II. (3)**
Concepts, methods, and techniques of applied economic analysis to a wide range of problems and decisions of the organization; product/service competition, profits, cost, demand, price, promotion, and capital formation; benefit maximization under least cost constraints; planning, programming, and budgeting. Prerequisite: 504. <Fall, Spring>

***506-507. Organizational Behavior I and II. (3, 3)**
Intensive examination of behavioral science research and theory, as well as contemporary organizational and decision theory, as a basis for understanding, managing, and changing organizations. Relevant concepts drawn from humanistic psychology, industrial sociology, cultural anthropology, and political science are employed as analytical tools which help explain individual behavior, small-group behavior, and behavior of the total organization as a large-scale system. Emphasis is upon a comparative organizational approach which views every organization, public or private, as a socio-technical system. <Fall, Spring>

***508. Organizational Ecology. (3)**
The nature of environmental change on the structure and operation of the organization; social, political, legal, ethical, and technological systems are examined as they relate to each other and to the management of small and large scale organizations. <Fall, Spring>

***509. Organizational Intelligence Systems. (3)**
An investigation of the development and applicability of intelligence system measuring and gathering techniques to organizational problems and decision-making; organizational and administrative processes of adaptation to the external environment are analyzed in terms of information needs; underlying concepts and techniques related to information requirements of the external environment of the organization are explored and analyzed under situations of change, risk, and uncertainty. <Fall, Spring>

***520. Operations Research and Production Management. (3)**
This course builds on the mathematical and statistical foundations of 500-501 to offer a survey of the use of quantitative methods and models in the design and control of operating systems. Emphasis is on comprehension of operation problems and quantitative models in order to build a capability for intelligent management use of operations research. Prerequisite: 501. <Fall, Spring>

***522. Marketing Management. (3)**
Provides an understanding of the marketing decision-making process. Surveys normative models for decision-making in different marketing situations. Various analytical tools available to the marketing executive for appraising, diagnosing, organizing, planning and formulating of marketing programs are discussed. Directed toward an understanding of the economic, social and political forces leading to change in the market place and the development of concepts that are useful in evaluating marketing situations, including the international setting. Prerequisite: 505. <Fall, Spring>

***526. Financial Management. (3)**
The finance function and its relation to other functions and to general policy of the firm. Topics include: the finance function, analysis and budgeting of funds, management of current assets, financing short- and intermediate-term needs, planning long-term debt policy and capital structure, capital costs and capital budgeting, dividend policy, valuation, mergers, and acquisitions. Prerequisites: 503 and 505. <Fall, Spring>

***530. Systems Theory and Information Science. (3)**
Formal aspects of systems theory in relation to the information needs of the organization. Quantification of information value through formal frameworks, including Bayesian decision theory. Prerequisite: 501 or the equivalent. <Spring>

***531. Multivariate Analysis for Administrative Science. (3)**
Mathematical models and statistical methods appropriate to the analysis of behavioral data in business and administration. Emphasis on interpretation of applied project data involving measurement of abilities, preferences, judgments, and values in a multivariate framework. Prerequisite: 501 or the equivalent. <Fall>

***532. Simulation in Management Science. (3)**
(Also offered as Math 452.) Study of a variety of simulation methods as an aid to managerial decision involving both micro- and macro-systems. Problems and projects involve active programming of simulations in at least one simulation language. Prerequisites: 501 and EE&CS 336 or the equivalent. <Spring>

***533. Quantitative Analysis for System Planning. (3)**
Quantitative methods for system planning, including population and manpower projections, industrial location analysis, regional economic analysis, and design of information systems. Examination and evaluation of projects from such fields as health and social services, transportation planning, state economic development, and environmental control. Prerequisites: 501 and 505, or the equivalent. <Offered upon demand>

***534. Computerized Administrative Information Systems. (3)**
Design of information systems for complex organizations. Data base organization, file organization and processing, on-line systems; and computer software related to system design. Prerequisites: 530 and EE&CS 336 or the equivalent. <Fall>

***540. Financial Accounting I. (3)**
Intensive study of the related problems of income determination and asset valuation for a going concern. Different theories expressed in the literature of economics and accounting are studied to arrive at workable solutions. Pre- or corequisite: 503. <Spring>

***541. Financial Accounting II. (3)**
Continuation of 540. <Fall>

***542. Income Tax Accounting. (3)**
Federal and state income tax laws and regulations including history, background, economic considerations, sources of tax law, and analysis of data for tax planning and reporting. Prerequisite: 541 or permission of the instructor. <Fall>

***543. Auditing Information Systems. (3)**
An examination of the structure of accounting systems and techniques for establishing information reliability for public and internal reporting purposes. Includes statistical sampling and electronic data processing concepts. Prerequisite: 541 <Fall>

***544. Advanced Accounting Theory and Practice. (3)**
The application of advanced accounting principles to practical cases and accounting problems. Prerequisite: 541. <Spring>

***545. Seminar in Accounting Theory and Its Development. (3)**
The study of accounting literature with emphasis on the development and current state of accounting theory. Topics include early history, formal statements of principles, relation of economics and accounting and current controversial issues. Prerequisite: 541. <Spring>

***546. Seminar in Controllership. (3)**
Study of advanced theory and practice of cost analysis, cost control, and cost determination; concepts of accounting systems design and control. Includes the application of mathematical and statistical techniques. Prerequisite: 541. <Offered upon demand>

***547. Seminar in Advanced Tax Accounting. (3)**
Case studies in advanced federal income tax problems; federal estate and gift taxes; a study of those New Mexico State taxes which concern the public accountant. Prerequisite: permission of the instructor. <Offered upon demand>

***548. Legal Concepts for Accountants. (3)**
An intensive examination of the legal concepts underlying accounting theory and practice. Specific topics, contracts, agency, sales, and legal ability of accountants. <Offered upon demand>

***549. Seminar in Managerial Control. (3)**
The nature of management control; characteristics of management control systems; implications of traditional and modern organization theories for control; uses and limitations of accounting systems and reports in the control process. Cases, readings, and student papers related to major fields where possible. Open to all students in the second year of the MBA program. Prerequisites: 503 and 507. <Offered upon demand>

***550. Economic and Behavioral Theories of the Organization. (3)**
An integration of economic and behavioral theories of the organization; problem solving activities of the organization under varying environmental structures and relationships; formulating organizational objectives, acquiring and processing of information, use of plans, budgets and other integrative control techniques. Prerequisite: 505. <Offered upon demand>

***551-552. Problems. (1-3 hrs. each semester)**
Special permission of the adviser and of the Dean of the School of Business and Administrative Sciences required. <Fall, Spring>

***553. Industrial Organization Economics. (3)**
Advanced analysis of market structures, conduct, and performance; empirical case studies of selected industries; issues in public policy. Prerequisite: 505. <Spring>

***554. Public Control of Business. (3)**
Philosophical, legal, political, and economic aspects of regulatory and control processes. Development of public policy toward business enterprise in the United States. Government legislation and its application to business mergers, market power, market concentration, and restrictive practices. Government control of prices; regulation of public utilities, public ownership, economic planning. Prerequisite: 505. <Fall>

***555. Urban Economics and Social Welfare. (3)**
Studies in urban economics and the quality of urban life; urban economic theory; urban transportation, housing, zoning and lands use problems; health economics; water and air pollution; problems and policies of federal, state, and local finance, and urban economics. Prerequisite: 505. <Offered upon demand>

***556. Experimental Economics. (3)**
The theory and use of the experimental method in economics. Special emphasis is given to value formation, market power, market forms, and bargaining. Prerequisite: 505. <Offered upon demand>

***557. Seminar in Organizational Economics. (3)**
Selected topics in advanced economic theory. Utility theory, theory of games, social welfare functions, Pareto optimality and competitive equilibrium, capital and interest theory. Prerequisite: 505. <Offered upon demand>

***558. Man and His Environment. (3)**
Selected topics on man and his environments. Problems of man and his relationship to groups, organizations, and society. Emphasis is given to problems of organizational adaptations resulting from personal and group alienation stress, and dislocation. Problems of population growth, pollution, and the quality of life will also be examined. Prerequisite: 505. <Offered upon demand>

***559. Seminar in Organizational Ecology. (3)**
Analysis and interpretation of the various interrelationships among the development of social, political, economic, and technological ideologies and the corresponding changes in the structure and behavior of organizations and society. Prerequisite: 505. <Offered upon demand>

***560. Psychobiological Approaches to Organizational Behavior. (3)**
Investigation of the interrelationship between social-psychological and biological factors in understanding social behavior. Social-biological experimental research findings are related to such areas as social learning, physiological and psychological development, and group processes. <Offered upon demand>

***561. Interpersonal Dynamics. (3)**
Exploration of the boundaries, strategic variables, and substance of interpersonal relations. Application of relevant behavioral science research and theory concerning human interaction with special emphasis upon industrial sociology, humanistic psychology, and psychoanalytic thought. <Spring>

***562. Organizational Design and Development.** (3)
Application of advanced behavioral science and organizational theory and research to the problems of organizational change and development. Focus is upon establishing systems-level criteria for organizational health and ways of enhancing an organization's ability to survive, adapt, solve problems, and increase its effectiveness. <Spring>

***563. Human Resources Management: Theory and Applications I.** (3)
Application of behavioral science research and information-decision systems theory to the problems of personnel management. Implications for skills inventories, manpower planning models, recruitment and selection, performance appraisal, and training and development. <Spring>

***564. Human Resources Management: Theory and Applications II.** (3)
Application of behavioral science research and systems theory to the problems of union-management relationships. Intensive analysis of representation, negotiation, and arbitration cases, and the development of effectiveness criteria for assessing union-management relationships. <Fall>

***565. Seminar in Administrative Theory and Decision Making.** (3)
A critical evaluation is made of the modern systems approach to organizational decision-making. An appraisal of traditional theory followed by an examination of current theory and its relationships to policy, planning and control in light of the environmental factors of power, authority, leadership and communications within the organization. <Offered upon demand>

***566. Human Relations Laboratory.** (3)
A series of intensive experiences devoted to developing self-awareness and diagnostic ability in interpersonal, group, organizational, and community behavior. Experiential learning activities involving work in t-groups, integration of basic theory and research, and personal confrontations with interpersonal and group issues. <Fall>

***567. Advanced Seminar in Planning Theory and Practice.** (3)
Intensive analysis of theory and practice of the top management function, of formal planning. Emphasizes role of the audit of firm's resources and environment as a recurring diagnostic and prognostic phase in planning. Focuses on formulation and evaluation of Strategic Adminstrative, and Operations (Tactical) Plans as they relate to problems of programming. Pre- or corequisite: 598 or permission of the instructor. <Offered upon demand>

***569. Seminar in Organizational Communication.** (3)
(See Sp Com 544.)

***570. Analysis of the Financial System.** (3)
Capital markets, financial instruments and institutions, and regulatory agencies in which both financial and non-financial firms operate. The demand for, and supply of, credit and capital. Study of the mechanisms of monetary adjustment and interest rate determination. The role of liquidity in risk management. Prerequisite: 526. <Fall>

***571. Security Analysis and Investment Management.** (3)
The theory and techniques of optimization of investment return subject to control of investment risk. Topics include: development of valuation models, analysis of securities and security market operation, survey of information availabilities and requirements, the role of participants in trading activities, theories of market behavior and price movements, portfolio programming and the implications of diversification for risk and return. Prerequisite: 526. <Fall>

***572. Financial Planning and Capital Budgeting.** (3)
Analysis of policies and procedures designed to identify and satisfy the short- and long-term financial requirements of the firm within the framework of its over-all objectives and the constraints under which it operates. Prerequisite: 526. <Spring>

***575. Seminar in Finance.** (3)
Supervised reading and discussion in areas of recent theoretical interest. Emphasis on the structural development of models used to characterize the financial environment and financial behavior of individuals and firms and the implications of such models for either decision-making and/or their relevance in providing insight into behavioral processes. Prerequisite: 526. <Spring>

***580. Research for Marketing Management.** (3)
Study of the management of marketing information as an integral part of the decision-making process. Emphasis on conceptual understanding, skills and knowledge needed by the marketing executive for evaluating information, specifying information requirements, interpreting research findings, evaluating alternative research proposals, and using research findings in developing marketing plans and programs. Prerequisites: 509, 522. <Fall>

***581. Seminar in Marketing Strategy.** (3)
This course focuses on the design and evaluation of strategic plans as applied to marketing systems and organizations. The role of product, pricing, promotion, channels and physical distribution in the development of a firm's integrated marketing program is studied. The point of view is that of the marketing executive engaged in problem-solving and decision-making in formulating an effective marketing strategy. Prerequisites: 509, 522. <Offered upon demand>

***582. Seminar in Marketing Models.** (3)
An examination of the state of the art in quantitative and behavioral marketing models with emphasis on recent advances. The use and limitations of models in the solution of marketing problems and evaluation of alternative courses of action will be examined. Underlying forces which influence marketing decisions are studied. Prerequisites: 509, 522. <Offered upon demand>

***583. Seminar in Comparative Marketing Systems.** (3)
Marketing is viewed as a system designed to plan, price, promote, and distribute goods and services in different societies. Problems of how analytical tools derived from economics, psychology, sociology, and management science can be applied in the conduct of the marketing function and in appraising markets in different cultures. Potential areas of study range from a comparative analysis of consumer behavior to the different aspects of the decision-making processes in the management of marketing organizations. Prerequisites: 509, 522. <Offered upon demand>

***584. Advanced Seminar in Marketing Theory.** (3)
An investigation of the historical development of marketing thought. Students survey the contributions of economics, behavioral science, and mathematics to a better understanding of the marketing process. Synthesis of these contributions by the marketing analyst is stressed. Prerequisites: 522 and consent of the instructor. <Offered upon demand>

***585. Fundamentals of International Business.** (3)
This introductory course is designed to provide the theoretical foundation and a conceptual framework for analyzing international business situations and the foreign environment within which the multinational organization must operate. The course will provide a survey of the various dimensions of international business operations. Of ultimate concern is a desire to sensitize the students to the differences in management practices which exist around the world. Prerequisite: 504. <Fall>

***586. Seminar in the Management of International Business Operations.** (3)
An investigation of the specific strategic, administrative, and operating problems facing the multinational business enterprise. Emphasis is placed on the decisions and decision-processes in regard to the various management functions that characterize international business management. Prerequisite: 585. <Spring>

***587. Seminar in Management of World Markets.** (3)
This course deals with problems of intense and sophisticated competition in various world markets. An integration of economics, political science, behavioral science, and the functional areas of business focused upon the problems of managing international business operations in advanced industrial nations, the less developed countries, and the centrally planned economies. Prerequisite: 585. <Offered upon demand>

***588. Advanced Seminar in International Business Administration.** (3)
This colloquium focuses on the organization in a multinational environment. Topics are determined by the instructor, depending on his and the student's research interest. Prerequisites: 585 and consent of the instructor. <Offered upon demand>

***590. Problems for Interns.** (1-6)
Prerequisite: M.B.A. student enrolled in approved Internship program. <Summer, Fall, Spring>

***595. Seminar in Corporation and Society. (3)**
A conceptual study of the business organization and its relationship to the environment in which it adapts, accommodates, and reacts. Selected topics will be discussed and written upon pertaining to the corporation vis-a-vis society, government, economics, foreign governments, values, unions, the individual, freedom, progress, stability, power, and ownership. <Offered upon demand>

***596. Seminar in Applied Organizational Intelligence. (3)**
Intensive application of research methodology to organizational and business situations and problems. Prerequisite: 509. <Offered upon demand>

***598. Seminar in Integrative Management. (3)**
Emphasizes system-oriented, inter-functional planning and administration with an interdisciplinary approach. Applications of Information and Intelligence Systems as the basis for management action. A variety of case studies and projects are used to develop a capacity for administrative decision-making employing strategic and operational planning, and other integrative devices. Prerequisites: all first and second year core courses. Enrollment limited to students in final semester of M.B.A. program. <Fall, Spring>

***599. Administrative Research and Problems I and II. (Thesis) (1-6)**

BUSINESS EDUCATION

See Education, Secondary

CHEMICAL ENGINEERING

See Engineering, Chemical

CHEMISTRY

PROFESSORS G. H. Daub (Chairman), M. Kahn, S. E. Smith; ASSOCIATE PROFESSORS R. D. Caton, L. D. Hansen, U. Hollstein, D. C. Neckers, E. P. Papadopoulos, N. E. Vanderborgh; ASSISTANT PROFESSORS F. Allen, W. Coleman, W. M. Kitchman, D R. McLaughlin, R. E. Tapscott, D. L. VanderJagt, E. A. Walters; INSTRUCTORS L. Deck, M. P. Malm.

The program of the Department of Chemistry conforms to the standards prescribed by the American Chemical Society; however, students who wish to be certified to the American Chemical Society should elect Chem 431, Inorganic Chemistry.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

For the degree of Bachelor of Arts: Chem 121L (or 101L), 122L, 301, 302, 303L, 304L, 315L, and at least 11 additional hours selected from courses numbered 324-496; or Chem 101L, 102L, 253L, 301, 302, 303L, 304L, 315L and at least 8 additional hours selected from courses numbered 324-496.

For the degree of Bachelor of Science: Chem 121L (or 101L), 122L, 307, 308, 309L, 310L, 311, 312, 313, 331L, 332L (or 333L and 334L), 351 and at least 10 additional hours selected from courses numbered 324-499; or Chem 101L, 102L, 253L, 307, 308, 309L, 310L, 311, 312, 313, 331L, 332L, (or 333L and 334L), 351 and at least 10 additional hours selected from courses numbered 324-499. The program must also include Physcs 160, 161, 163L, 262, 264L, Mathematics equivalent to 265, and German equivalent to 252 or 262.

Any deviation from the requirements prescribed above must be approved by the Department of Chemistry and must total a minimum of 32 hours (BA degree) or 44-47 hours (BS degree).

MINOR STUDY

20 hours in Chemistry, including Chem 101L, 102L, 253L, and either 301, 302, 303L, 304L or 311, 312, 331L and 332L; or Chem 121L (or 101L), 122L, 301, 302, 303L and 304L or 311, 312, 331L, 332L and 3 additional hours selected from courses numbered 315-496. Chem 307-310L may be substituted for Chem 301-304L in which case the minor will total 22 hours. Chem 141L and 281 do not count toward the minor.

100L. Chemistry for the Citizen. (4)
Basic introductory course in descriptive and nonquantitative terms, covering the history and philosophy of chemistry, the make-up and interaction of molecules, chemistry in our environment, applications in industry, and the earth sciences. 3 lectures, 3 hrs. lab. <Fall, Spring>

101L. General Chemistry. (4)
Introduction to the chemical and physical behavior of matter. Prerequisite: grade of C or better in Math 010 or an ACT math score high enough to exempt student from Math 101. 3 lectures, 3 hrs. lab. <Summer, Fall, Spring>

102L. General Chemistry. (4)
Continuation of 101L and including qualitative analysis. Prerequisite: 101L or 121L with grade of C or better. 3 lectures, 3 hrs. lab. <Summer, Fall, Spring>

121L. General Chemistry. (4)
A comprehensive study of the chemical and physical behavior of matter with application of these principles to quantitative laboratory techniques and inorganic preparations. This course is designed for the student intending to major in science. Prerequisites: 1 yr. high school chemistry and qualifying ACT scores. 3 lectures, 3 hrs. lab. **(Credit not allowed for both 121L and 101L.)** <Fall>

122L. General Chemistry. (5)
Introduction to chemical equilibrium and the periodic properties of the elements. Application of these principles to qualitative and quantitative analysis. Prerequisite: 121L or grade of A in Chem 101L or permission of instructor. 3 lectures, 6 hrs. lab. **(Credit not allowed for both 122L and 102L.)** <Spring>

141L. Elements of General Chemistry. (4)
A one-semester course in general chemistry. 3 lectures, 3 hrs. lab. **(Credit not allowed for both 141L and 101L.)** <Fall, Spring>

253L. Quantitative Analysis. (4)
Theory and techniques of volumetric and gravimetric analysis. Prerequisite: 102L. 2 lectures, 6 hrs. lab. <Summer, Fall, Spring>

281. Integrated Organic Chemistry and Biochemistry. (4)
A survey interrelating the major principles of organic chemistry and biochemistry. Prerequisite: 101L or 141L. **(Credit not allowed for both 281 and 301.)** <Fall, Spring>

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: 101L or 141L. 3 hrs. lab. <Fall>

****301. Organic Chemistry. (3)**
The chemistry of the compounds of carbon. Prerequisite: 102L or 122L; it is mandatory that 303L be taken concurrently. <Summer, Fall, Spring>

****302. Organic Chemistry. (3)**
Continuation of 301. Prerequisite: 301; it is mandatory that 304L be taken concurrently. <Summer, Fall, Spring>

****303L. Organic Chemistry Laboratory. (1)**
To be taken concurrently with 301. 3 hrs. lab. <Summer, Fall, Spring>

****304L. Organic Chemistry Laboratory. (1)**
To be taken concurrently with 302. 3 hrs. lab. <Summer, Fall, Spring>

****307. Organic Chemistry. (3)**
The chemistry of carbon compounds with emphasis upon mechanisms and spectral methods. Prerequisites: 102L or 122L and permission of instructor; it is mandatory that 309L be taken concurrently. (Credit not allowed for both 301 and 307.) <Fall>

****308. Organic Chemistry.** (3)
Continuation of 307. Prerequisite: 307; it is mandatory that 310L be taken concurrently. (Credit not allowed for both 302 and 308.) <Fall>

****309L. Organic Chemistry Laboratory.** (2)
To be taken concurrently with 307. 6 hrs. lab. <Fall>

****310L. Organic Chemistry Laboratory.** (2)
To be taken concurrently with 308. 6 hrs. lab. <Spring>

****311. Physical Chemistry.** (3)
The quantitative principles of chemistry, including gases, thremodynamics equilibrium, quantum systems, spectroscopy and kinetics, developed by numerous problems. Prerequisites: 253L or 122L, Math 264; pre- or corequisites: Math 265, Physcs 262. <Fall>

****312. Physical Chemistry.** (3)
Continuation of 311. Prerequisite: 311. <Spring>

****313. Physical Chemistry.** (2)
Continuation of 312. Prerequisite: 312. <Fall 1973>

****314L. Physical Chemistry Laboratory.** (1)
Prerequisite: 312. 3 hrs. lab. <Fall>

****315L. Introductory Physical Chemistry.** (4)
A one semester survey of the fundamentals of physical chemistry with primary emphasis upon biological and biochemical applications. Prerequisites: 102L, 253L or 122L, Math 121 or 150 or 162 or 180 and 181, or permission of instructor. **(Cannot be used for credit towards a B.S. in Chemistry.)** 3 lectures, 3 hrs. lab. <Fall>

****324.** [323] **Biochemistry.** [Introduction to Biological Chemistry] (3)
Introductory course into metabolic reaction 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 308. (Credit not allowed for both 324 and 481.) <Spring>

****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.** (2)
Continuation of 331L. Pre- or corequisites: 312, 331L. 6 hrs. lab. <Spring>

333L. Junior Honors Laboratory. (2)
Similar to 331L but for honors students. Pre- or corequisites: 311, 351. 6 hrs. lab. <Fall>

334L. Junior Honors Laboratory. (2)
Similar to 332L but for honors students. Pre- or corequisites: 333L, 312. 6 hrs. lab. <Spring>

****335. Descriptive Inorganic Chemistry.** (2)
A survey of the descriptive chemistry of the elements, including periodic trends, ionic lattices, structures and reactivites of nonmetal compounds, and transition metal complexes. Prerequisite: 102L or 122L. <Fall>

****336L. Inorganic Synthesis.** (1)
The synthesis and characterization of inorganic compounds of the metals and non-metals. Introduction to the laboratory techniques of inorganic chemistry. Prerequisite: 335. 3 hrs. lab.

351. [350] **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. Prerequisites: 122L or 253L; corequisite: 311. <Fall>

***411. Stereochemistry.** (2)
Stereochemistry of carbon compounds (including carbohydrates) and of organic reactions. Prerequisite: 302 or 308. <Fall>

***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. <Spring>

***413. Organic Synthesis. (2)**
Basic concepts of organic synthesis including philosophy and factors in design or organic syntheses, group transformations, altering chain length, condensations, rearrangements, etc. Prerequisites: 302-304L or 308-310L. <Fall>

***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>

***415L.** [405L] **Qualitative Organic Analysis. (4)**
Identification of carbon compounds through the characteristic reactions and spectral behavior of the functional groups. Prerequisites: 122L or 253L and 302-304L or 308-310L and permission of instructor. 2 lectures, 6 hrs. lab. <Fall>

***431 Inorganic Chemistry. (3)**
Survey of chemical and physical properties of elements and their compounds, coordination chemistry, and bonding theory. Prerequisite: 311 or permission of instructor. <Fall>

***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. Advanced Analysis. (1-3)**
Detailed description of ionic equilibria of complex ion solutions, theory of separations and applications to analytical and preparative methods, and a case study treatment of contemporary analytical problems. Prerequisite: 351 or permission of instructor. <Fall>

***465.** [415] **Structure of Matter. (3)**
Elements of molecular orbital theory; dipole moments; dissociation energies; quantum mechanical description of chemical bonds; hybridization; chemical consequence of structure. Prerequisite: permission of instructor. <Fall>

***466. Computers in Chemistry. (2)**
Introduction to the Fortran IV computer language with application to problems of chemical interest. Prerequisite: permission of instructor. <Fall>

***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 chemistry. (Credit not allowed for both 324 and 481.) Prerequisites: 302 or 308 and 312 or 315L, 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. [497-498] **Undergraduate Problems. (2-5 hrs. each semester)** <495-Summer, Fall; 496-Spring>

497-498. Senior Honors Research. (3 hrs. each semester)
Senior paper based on independent research. <497-Summer, Fall; 498-Spring>

***501. Chemical Bonding Theory. (3)**
An introduction to the quantum mechanical interpretation of molecular structure and chemical reactivity. Wave mechanics, Hückel theory, spectroscopy, orbital symmetry conservation, ligand field theory. <Fall>

***502. Molecular Structure Determination. (3)**
A survey of non-chemical methods used to ascertain the electronic and geometric structures of molecules: scattering techniques, spectroscopic methods, mass spectrometry, dipole moments, magnetic properties. <Spring>

***503. Chemical Synthesis. (3)**
A study of methods of forming and breaking chemical bonds which are used to prepare inorganic and organic molecules. <Fall>

***504. Chemical Dynamics. (3)**
A case study approach to the thermodynamics and kinetics of chemical change. <Spring>

***510. Advanced Organic Chemistry. (3)**
A study of mechanisms of organic reactions with emphasis on reactive intermediates, stereochemistry, structure and reactivity, relationships and types of experimental evidence upon which current interpretations of reactivity are based. Prerequisite: 414 or 504 or permission of instructor. <Spring 1973 and alternate years>

***512. Advanced Organic Chemistry. (3)**
A study of the principles of synthesis of organic compounds with emphasis on the application of reaction mechanisms and the logical analysis of complex synthetic problems. Prerequisite: 413 or 503 or permission of instructor. <Spring 1974 and alternate years>

***513. Topics in Organic Chemistry. (1-3)‡**
Possible topics are synthetic methods degradative methods, macromolecular chemistry, stereochemistry, mechanisms, polycylic homocyclic compounds, polycyclic heterocyclic compounds. Prerequisite: permission of instructor. <Fall>

***514. Topics in Organic Chemistry. (1-3)‡**
Possible topics are nitrogen, oxygen, and sulfur heterocycles, free radical chemistry, organometallics, quantum organic chemistry, isotope effects, organic mass spectrometry. Prerequisite: permission of instructor. <Spring>

***521.** [513] **Radiochemistry. (3)**
Elementary nuclear theory, radiations and their interaction with matter; detection of radiation. Prerequisite: 312. <Fall 1973 and alternate years>

***522. Advanced Topics in Radiochemistry. (3)**
Principles, ideas and tracer techniques in the application of radioactivity to chemistry. Prerequisite: 513 or permission of instructor. <Spring 1974 and alternate years>

***523L.** [506] **X-ray Crystallography. (4)**
(Also offered as Geol 506L.) Principles of X-ray diffraction, Debye-Scherrer, Weisenberg, and precession methods. Space group symmetry and its determination. Prerequisites: 311 or Math 264, and permission of instructor. 2 lectures, 6 hrs. lab.

***524L.** [507L] **Crystal Structure Analysis. (3)**
(Also offered as Geol 507L.) Structure factor analysis: Fourier methods; the Patterson function; examples of complete structure analysis. Prerequisites: 523L and permission of instructor. EE&CS 336 is strongly recommended. 2 lectures, 3 hrs. lab.

***525. Special Topics in Chemistry. (1)‡**
Discussion of a topic of general interest such as technical writing, atmospheric chemistry, chemical literature, medicinal chemistry, chemical evolution, and others. Prerequisite: permission of instructor. <Fall>.

***526. Special Topics in Chemistry. (1)‡**
Discussion of a topic of general interest such as error analysis, lasers in chemistry, group theory, environmental chemistry and others. Prerequisite: permission of instructor. <Spring>

***532. Advanced Inorganic Chemistry.** [Advanced Topics in Inorganic Chemistry) **(3)**
Survey of coordination chemistry of metals: stereochemistry, reactions, and ligand field theory. Prerequisite: 431. <Spring 1973 and alternate years>

***533. Topics in Inorganic Chemistry. (1-3)‡**
Possible topics are metal complexes, mechanisms, stereochemistry, inert gas chemistry, bio-inorganic. Prerequisite: permission of instructor. <Fall>

***534. Topics in Inorganic Chemistry. (1-3)‡**
Possible topics are physical methods, pyrolysis reactions, redox reactions, chemical periodicity, ligand field theory. Prerequisite: permission of instructor. <Spring>

***541. Advanced Analytical Chemistry. (3)**
Statistics in chemical analysis; equivalence point detection, direct measurement of concentration, and the use of reagents applied to non-instrumental and instrumental methods. Prerequisite: permission of instructor. <Fall 1972 and alternate years>

***543. Topics in Analytical Chemistry. (1-3)‡**
Possible topics are columnar processes, digital electronics, trace analysis, non-aqueous solvents. Prerequisite: permission of instructor. <Fall>

***544. Topics in Analytical Chemistry. (1-3)‡**
Possible topics are selective chelation, electrochemical analysis, thermal analysis, sampling techniques, transport phenomena. Prerequisite: permission of instructor. <Spring>

***561. Advanced Physical Chemistry. (3)**
Fundamentals of quantum theory. Observables, operators, eigenvalue problems, one-dimensional systems, perturbation theory, variational methods. <Fall 1972 and alternate years>

***562. Advanced Physical Chemistry. (3)**
Application of quantum theory to atoms and molecules. Many electron problems, radiation theory. Electronic vibrational, rotational, and resonance spectroscopy. Matrix methods. Prerequisite: 561. <Spring 1973 and alternate years>

***563. Topics in Physical Chemistry. (1-3)‡**
Possible topics are thermodynamics, kinetics, statistical mechanics, molecular spectroscopy, molecular complexes. Prerequisite: permission of instructor. <Fall>

***564. Topics in Physical Chemistry. (1-3)‡**
Possible topics are scattering and diffraction, chemistry at interfaces, physical chemistry of macromolecules, solid state, nonequilibrium thermodynamics. Prerequisite: permission of instructor. <Spring>

***581. Advanced Topics in Biological Chemistry. (3)‡**
(Also offered as Med Sc 581.) In depth treatment of one or two topics at an advanced level. Prerequisite: 482. <Offered upon demand>

***599. Master's Thesis. (1-6 hrs. per semester)** Allen, Atencio, Caton, Coleman, Daub, Hansen, Hollstein, Kahn, LeBaron, Litchman, Loftfield, McLaughlin, Neckers, Papadopoulos, Reyes, Scallen, Smith, Tapscott, Vanderborgh, VanderJagt, Walters, Wild, Woodfin. See the **Graduate School Bulletin** for total credit requirements.

***623. Biochemistry of Steroids. (3)**
(Also offered as Med Sc 623.) Includes such topics as the isolation, proof of structure, chemical synthesis, stereochemistry, and absolute configuration of important steroids; biosynthesis and metabolism of cholesterol, adrenal steroids, androgens and estrogens. Prerequisites: 302 or 308, 324 or 481, or Med Sc 590-591.

***625. Chemistry Seminar. (1)†**
May be repeated for credit: 2 credits are required and 4 allowed for the Master's degree, 3 credits are required and 6 allowed for the Ph.D. degree. <Fall, Spring>

***650. Research. (2-6 to a maximum of 12)** <Summer, Fall, Spring>

***699. Dissertation. (3-9 hrs. per semester)** Allen, Atencio, Caton, Coleman, Daub, Hansen, Hollstein, Kahn, LeBaron, Litchman, Loftfield, McLaughlin, Neckers, Papadopoulos, Reyes, Scallen, Smith, Tapscott, Vanderborgh, VanderJagt, Walters, Wild, Woodfin. See the **Graduate School Bulletin** for total credit requirements.

CHEMISTRY, PHARMACEUTICAL

See Pharmacy

CIVIL ENGINEERING

See Engineering, Civil

CLASSICAL LANGUAGES

CLASSICS

See Modern and Classical Languages.

COMMUNICATIVE DISORDERS

ASSOCIATE PROFESSOR L. E. Lamb (Chairman); PROFESSOR F. M. Chreist; ASSOCIATE PROFESSORS D. S. Butt, B. E. Porch (part-time); ASSISTANT PROFESSORS D. J. Draper, R. B. Hood, W. J. Ryan; ADJUNCT ASSISTANT PROFESSORS K. W. Hattler, D. G. Sims; LECTURERS M. O. Ahern, J. B. Grainger, K. M. Peterson.

MAJOR STUDY

36 hours in Communicative Disorders. **Required:** 280, 302, 303, 320, 321. **Electives:** 21 hours from 325, 326L, 330, 422, 425, 426, 427, 430, 435, 436, 437, 438L, 440, 450, 451L, 458, 492, 493, 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 pre-professional. 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

18 hours in the Department of Communicative Disorders chosen from courses listed for Major.

103. Speech Improvement. (1 hr. per semester, to a maximum of 3)
Clinical work for students having articulation, voice and language problems in oral communication. <Summer, Fall, Spring>

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>

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>

292. Introduction to the Study of Language. (3 or 4)
(See Ling 292.)

***302. Communicative Disorders. (3)** Butt, Chreist
(Also offered as Spc Ed 302.) Nature of communicative disorders, including speech, hearing and language disorders in children and adults. Methods of identification and remediation. <Summer, Fall>

***303. Phonetics. (3)** Chreist
(Also offered as Sp Com 303.) English phonetics as applied to the problems of articulation, pronunciation, rhythm, dialects, and to the teaching of speech, English, and to speech correction. <Fall, Spring>

***320. Acoustics of Speech and Hearing. (3)** Ryan
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)** Draper
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)** Draper
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 on demand>

***422. Hearing Conservation.** (3) Lamb
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
Theoretical and methodological approaches to the training of hearing impaired individuals through speech reading, auditory training, and hearing aids. Prerequisite: 321 or equivalent. <Spring>

***426. Manual Communication.** (1) Hood
Fingerspelling and sign language. <Fall, Spring>

***427. Problems of the Hearing-Impaired.** (3) Hood
(Also offered as Spc Ed 427.) Problems encountered by the deaf and hard of hearing, including communication abilities, psychological and sociological adjustment, educational achievement, and vocational placement. <Fall>

***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 450. <Spring>

***436. Stuttering.** (3) Butt, Draper
Theories of stuttering and other rhythmic disorders and approaches to treatment. Prerequisite: 302 or permission of instructor. <Spring>

***437. Aphasia.** (3) Porch
Symbolic disorders of communication, including receptive and expressive speech and language problems. Prerequisites: 302 and 430 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 departmental chairman. <Summer, Fall, Spring>

***450. Anatomy and Physiology of Speech and Hearing.** (3) Ryan
Structure and function of the speech and hearing mechanisms as they relate to normal and disordered communication. Prerequisite: permission of instructor. <Fall>

***451L. Anatomy of Speech and Hearing Laboratory.** (1) Ryan
Laboratory study of the organs involved in speech and hearing. Pre- or corequisite: 450. 3 hrs. lab. <Fall>

***458. Clinical Practice.** (1-3, to a maximum of 6) Draper
Speech pathology and audiology in the clinic. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***492. Introduction to Linguistics.** (3) Pickett
(See Engl 440).

***493. Reading and Research in Honors.** (3) <Summer, Fall, Spring>

***494. Senior Thesis.** (3) <Summer, Fall, Spring>

***503. Physiologic Phonetics.** (3) Ryan
Prerequisites: 303, 320, and 450, or permission of instructor. <Fall>

***504. Acoustic Phonetics.** (3) Ryan
Prerequisite: 303 or permission of instructor. <Spring>

***506. Seminar in Foreign Accent.** (3) Chreist
Prerequisites: 303, 492 or Anth 354 and/or permission of instructor. <Fall>

***530. Language Disorders in Children.** (3) Butt
Differential diagnosis and treatment methods. Prerequisite: 430 or permission of instructor. <Fall>

***531. Communication Problems of the Cerebral Palsied.** (3) Butt
Etiology and symptomatology of cerebral palsy, evaluation procedures and varied approaches to therapy. Prerequisite: 302 or permission of instructor. <Spring>

***535. Seminar in Cleft Palate.** (3) Ryan <Summer only>

***536. Seminar in Research in Stuttering.** (3) Butt
Prerequisite: 436 or permission of instructor. <Fall>

***537. Seminar in Aphasia.** (3) Porch
Prerequisite: 437 or permission of instructor. <Spring>

***539. Seminar: Current Concepts in Speech Pathology and Audiology. (1, repeatable to a total of 2)** Lamb
Prerequisite: permission of instructor. <Fall, Spring>

***551-552. Problems.** (1-3 hrs. each semester) <Summer, Fall, Spring>

***555. Seminar in Linguistics and Language Pedagogy.** (1-3)
(See Ling 555.)

***558. Special Tests in Speech Pathology.** (3) Butt
A study of special tests of speech and language behavior, instruction in integration of test data with other diagnostic information. Prerequisite: permission of instructor. <Spring>

***560. Audiology and Audiometry.** (3) Hood
Techniques of evaluating residual hearing; administration and interpretation of differential diagnostic hearing tests; speech audiometry and hearing aid evaluation. Prerequisites: 321, 425, or permission of instructor. <Fall>

***561. Clinical Audiology.** (3) Lamb
Principles of differential diagnosis of organic and nonorganic hearing disorders; application of special audiometric techniques. Prerequisite: 560 or equivalent. 2 lectures, 2 hrs. lab. <Spring>

***563. Speech Audiometry and Hearing Aids.** (3) Hood
Theory and application of speech materials in the assessment of auditory disorders; characteristics of hearing aids; hearing aid evaluation procedures. Prerequisites: 321, 560, or permission of instructor. <Spring>

***565. Seminar in Aural Rehabilitation.** (3) Hood
Prerequisites: 321, 425 or equivalent. <Summer only>

***566. Seminar in Audiology.** (3) Lamb
Prerequisites: 560, 561, or permission of instructor. <Summer>

***599. Master's Thesis** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements. <Summer, Fall, Spring>

COMPARATIVE LITERATURE

COMMITTEE IN CHARGE: PROFESSORS J. E. White (Languages), Chairman; G. W. Arms (English), W. D. Jacobs (English), R. R. MacCurdy (Languages), D. A. McKenzie (Languages), W. H. Roberts (Languages); ASSOCIATE PROFESSORS T. Holzapfel (Languages), J. B. Zavadil (English); ASSISTANT PROFESSOR J. F. Holland (English).

The major in Comparative Literature is an interdepartmental major administered jointly by the Department of English and the Department of Modern and Classical Languages. For descriptions of individual courses see the listings under the two departments.

MAJOR STUDY

The minimum requirement of 30 hours includes: 250 or 306 or 410; 9 hours of literature in a foreign language; and the remainder drawn from courses listed under Comparative Literature below, or other courses approved by the adviser.

Students may minor in literature (British or American or any foreign language), but courses taken to satisfy the major cannot be used to satisfy the minor requirement. Other minor fields particularly recommended are anthropology, art history, history, and philosophy.

Students planning to major in Comparative Literature are requested to consult with an adviser either in their sophomore year or early in their junior year. Programs will be carefully planned in both the major and the minor.

MINOR STUDY

15 hours including 6 or 9 hours in literature in a foreign language and 6 or 9 hours from courses listed under Comparative Literature below.

PERIOD MINOR STUDY

In consultation with the designated adviser and with his approval an interdisciplinary minor with emphasis on one historical period (including proficiency in an appropriate foreign language) may be composed of a minimum of 18 hours in a pattern of appropriate courses drawn from literature, history, fine arts, music, philosophy, or other related courses. Adviser: Professor White (Langauges).

250. The Study of Literature. [Approaches to Literature.] **(3)**
(See Engl 250.)

306. Introduction to the Study of Foreign Literatures. (3)
(See M Lang 306.)

***334. Spanish American Literature in Translation. (3)**

***335. French Literature in Translation. (3)** Kolbert, Murphy

***336. German Literature in Translation. (3)** R. Holzapfel

***337. Spanish Literature in Translation. (3)** MacCurdy

***338. Russian Literature in Translation. (3)** T. Holzapfel

***339. Greek Drama in Translation. (3)** Smith

***340. Latin Literature in Translation. (3)** Zavadil

***341. Greek Mythology. (3)** Smith
Theory of origin and use of myths, examined from point of view of psychologist, anthropologist, and religious historian.

***342. Greek Non-Dramatic Literature in Translation. (3)** Smith

375. [275] **World Literature from Homer to Dante. (3)** Jacobs, Kuntz, Zavadil
(See Engl 375.)

376. [276] **World Literature from Rabelais to Mann. (3)** Dickey, Jacobs, Kuntz, Warner
(See Engl 376.)

400. [438] **Literary Movements.** [Literary Movements since 1940] **(3)**
(Also offered as Engl 400.)

410. [466] **Literary Criticism. (3)**
(Also offered as Engl 410.)

452. [456] **The Middle Ages.** [Literature of Medieval Europe] **(3)**
(Also offered as Engl 452.)

459. Irish Literature (3)
(Also offered as Engl 459.)

470. [437] **Contemporary Literature.** [Contemporary Drama] **(3)**
(See Engl 470)

***475. Dante. (3)** White
Principally the **Vita Nuova** and the **Divine Comedy.** <Spring 1972 and alternate years>

481. [461] **The Folktale in English. (3)**
(Also offered as Engl 481.) The tradition of folk motifs and themes in the development of the tale as a form of storytelling in English and American literature. <Fall>

487. [462, 465] **Studies in Genre: Comedy, Epic, Satire, Tragedy, etc.** [The Epic; Tragedy] **(3)**
(Also offered as Engl 487.)

***551. Problems. (1-6 hrs. per semester)‡**
For M.A. candidates

***580. Seminar in Modern Languages and Literatures. (3)**
(Also offered as M Lang 580.) Intradepartmental seminar to provide opportunity for study in literary or other topics which relate to more than one foreign language and culture.

***599. Master's Thesis. (1-6 hrs. per semester)**

COMPUTING AND INFORMATION SCIENCE

Student Advisers: PROFESSORS Ahmed Erteza (Electrical Engineering and Computer Science), William Peters (Business and Administrative Sciences); Donald Morrison (Mathematics and Statistics).

At the present time degrees dealing with computers and Computer Science are available as options in Electrical Engineering and Computer Science, Business and Administrative Sciences, and Mathematics and Statistics. For details, students should consult advisers listed above.

The University is in the process of developing an interdisciplinary program in Computer Science and as soon as practicable a degree program will be offered.

CURRICULUM AND INSTRUCTION

See Education, Curriculum and Instruction.

DANCE

See Theatre Arts, Dance.

DENTAL HYGIENE

PROFESSOR M. Novitski[2]; ASSOCIATE PROFESSOR W. Creighton (Director); ASSISTANT PROFESSOR M. L. duFault; INSTRUCTORS L. Keeffe, C. Miera; PART-TIME LECTURERS C. E. Cullen, R. Sei, W. Thornberry, R. J. Walpole; PART-TIME INSTRUCTORS M. Atkinson, T. D. Breshears, D. Clifford, W. Graham, M. Hunt, I. Navarre, L. Sais.

DENTAL HYGIENE

CURRICULUM

See pp. 285-287.

100. Orientation. (2) Keeffe, Miera
Survey of dental hygiene, dentistry, and related professions. Personal and oral health. Introduction to patient education. <Fall>

101L. Preclinical Dental Hygiene. (2)
Introduction to the clinical skills of dental hygiene. 1 lecture, 3 hrs. lab. <Fall>

102L. Clinical Dental Hygiene. (3)
Techniques of oral hygiene procedures in a clinical environment. Prerequisites: 100, 101L, 111L. 2 lectures, 8 hrs. lab. <Spring>

110. Oral Anatomy. (3) Novitski
Anatomy of head and neck with emphasis on oral structures and their functions. Prerequisite: 100 or permission of instructor. <Spring>

111L. Dental Anatomy. (2) Keeffe
Morphology of tooth structure. 1 lecture, 3 hrs. lab. <Fall>

112L. Oral Radiography. (1) Thornberry
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>

200L. Integrative Dental Hygiene. (3) duFault
Continuation of 102L. Integration of dental hygiene sciences with experiences in clinical procedures. Prerequisite: 102L. 2 lectures, 11 hrs. lab. <Fall>

202L. Integrative Dental Hygiene (4) duFault
Continuation of 200L. Prerequisite: Completion of all courses in first 3 semesters of curriculum. 1 lecture, 16 hrs. lab. <Spring>

210L. Histology. (2) Walpole.
Introductory study of cells, tissues, and organ systems of human body with emphasis on oral structures. Prerequisite: 110. 1 lecture, 2 hrs. lab. <Fall>

212. Pathology. (2) Walpole
Introduction to general pathology; pathology of diseases affecting teeth and their supporting structures; oral manifestations of systemic disturbances. Prerequisites: 210L, Biol 136, 139L, 233L. <Spring>

220L. Dental Materials. (2) Sei
A survey of materials used in dentistry; training in common dental laboratory procedures. Corequisite: 200L. 1 lecture, 2 hrs. lab. <Fall>

222. Dental and Public Health Education. (2) Atkinson, Creighton
Teaching of dental health; methods and materials to use; theory and practice of preventive dentistry and public health. Open to dental hygiene students with 30 hours in the dental hygiene curriculum. <Spring>

230. 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: 102L. <Fall>

240. Dental Hygiene Seminar. (0)
Attendance at one-day dental hygiene seminar presented annually between fall and spring semesters. Prerequisite: 3rd semester standing. <Fall>

242. Practice Management and Ethics. (1) Novitski
The principles of professional ethics; the laws and regulations related to dentistry and dental hygiene; essentials of office management, record keeping, and practice building. Prerequisite: 4th semester standing. <Spring>

325. Nutrition. (3) Harris
(See H Ec 325.)

400. Seminar. (2) duFault
Critical analysis of literature in the health and education professions. Prerequisite: Ed Fdn 310, permission of instructor. <Offered on demand>

410. Dental Health Education Methods. (3) duFault
The selection, analysis and use of effective dental health education media for individuals and groups. Prerequisite: permission of instructor. <Offered on demand>

420L. Advanced Clinical Dental Hygiene. (3)
Instruction and practice in current periodontal, radiographic, hospital and geriatric dental hygiene procedures. Prerequisite: Certification and licensure in dental hygiene with a minimum of six months (120 days) of working experience in a general dental or periodontal practice, subject to review by Dental Programs faculty; documentation of experience required. 2 lectures, 8 hrs. lab. <Offered on demand>

430. Introductory Dental Hygiene Teaching Internship. (3) Keeffe
Techniques of preclinical instruction of dental hygiene with practice in teaching and evaluating laboratory performances of students. Prerequisite: Ed Fdn 300, 310, Sec Ed 361; pre- or corequisites: 410, 420L. 1 lecture, 4 hrs. practice. <Offered on demand>

432. Dental Hygiene Teaching Internship. (4)
Continuation of 430 with emphasis on clinical instruction and evaluation. Prerequisite: 420L. 1 lecture, 8 hrs. practice. <Spring>

DENTAL ASSISTING

CURRICULUM
See p. 282.

121L. Introductory Dental Sciences. (3) Cullen, Miera, Novitski, Thornberry
Dental radiography, principles and practice. 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, 2 hrs. lab. <Fall>

122L. Advanced Dental Science. (3) Breshears, Miera, Walpole
Study of materials used in dentistry; laboratory training in handling materials and in dental laboratory procedures. Introduction to manifestations of oral diseases, the use of

anesthetic agents and the dental auxiliary's role in their administration. Detailed study of dental office management. Study of dental specialties, dental literature, and dental health materials. Prerequisites: 121L and 131L. 4 lectures, 11 hrs. lab. <Spring>

131L. Principles of Dental Assisting. (2) Miera
Detailed study of art of dental assisting. 1 lecture, 3 hrs. lab. <Fall>

132L. Practicum in Dental Assisting. (3) Miera, Novitski
Supervised clinical practice of dental assisting in selected facilities. Prerequisites: 121L and 131L. 12 hrs. lab. <Spring>

ECONOMICS

PROFESSORS S. Cohen (Chairman), G. Boyle, P. Gregory, D. Hamilton, N. Wollman; ASSOCIATE PROFESSORS P. Barth, S. Ben-David, P. Chung, M. Gisser, G. Hufbauer, P. Jonas, A. Parker, D. Tailby, P. Therkildsen, L. Zink; ASSISTANT PROFESSORS F. L. Brown, A. Church, N. Van Cott.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

Econ 200, 201, 289, 300, 303, 315, and 18 additional hours in Economics, 15 of which must be upper division. Math 180 or equivalent is required. Students planning to undertake employment upon graduation rather than further study are advised to take accounting, marketing, and organization theory in the School of Business and Administrative Sciences. Additional courses in mathematics and quantitative techniques are recommended for all students.

DISTRIBUTED MINOR FOR ECONOMICS MAJORS. With the consent of the departmental chairman, 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.

100. Introduction to Economics. (3)
Origins of capitalism, transplantation and adaptation in the New World, and new institutions in 19th and 20th century America. <Fall, Spring>

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. <Fall, Spring>

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. <Fall; 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.<Fall, Spring>

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 chairman.

****303. Macro-economic Theory. (3)** Gisser, Hufbauer, Van Cott
Composition, fluctuations, growth, and distribution of national income. Prerequisites: 200, 201, or consent of instructor. <Fall, Spring>

310. Business Finance. (3)
(See B&AS 310.)

****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. <Fall, Spring>

***320. Economics of Labor Relations.** (3) Barth, Cohen, Gregory
Labor force, unions, labor-management relations, legislation, wages, and level of employment. Prerequisites: 200, 201. <Fall, Spring>

***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. <Spring>

340. Transportation. (3)
Principles and problems of transportation. Prerequisites: 200, 201.

***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. Economic Theory.** (4)
Emphasis on theory of the Firm and National Income determination. Prerequisites: 300 and 303, or equivalents. <Fall>

***407. Mathematical Methods in Economics.** (3) Brown
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. <Fall>

***409. Economic Statistics.** (3) Ben-David, Brown, Jonas
Prerequisites: Statistics, Economic Theory. <Spring>

***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) Hufbauer, Tailby
Theories, policies, and practices, with emphasis on Latin American economic problems. Prerequisites: 200, 201.

****421. *Latin American Economies.*** (3) Gregory
Analysis in non-technical terms of country characteristics and recent growth experience, balance of payments, commodity price stabilization, import substitution, multi-national markets, inflation, land reform, development strategies, and role of foreign assistance. Prerequisites: 200, 201. <Spring>

***422. Economic Security.** (3) Therkildsen
Public and private annuity, unemployment compensation, workmen's compensation, and medical programs. Prerequisites: 200, 300, or consent of instructor.

***424. International Economics.** (3) Hufbauer, Van Cott
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) Barth, Cohen, Gregory
History of American labor movement. The labor management relationship with emphasis on the economics of collective bargaining. Prerequisite: 320.

***440. Regional Analysis.** (3)
Analysis of regional economies, economic models. Prerequisites: 200, 201.

***442. Natural Resources. (3)** Ben-David, Brown, 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 445.) 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 permission of instructor.

***450. Comparative Economic Systems. (3)** Jonas
A critical analysis of the proposed major reforms of the existing economic system. Prerequisites: 200, 201.

***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, Pol Sc, and Soc 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. <Fall>

***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. <Spring>

***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
Competition and monopoly; value and distribution; general equilibrium; welfare economics. Prerequisites: 407 or equivalent; one year of calculus. <Spring>

***501. Advanced Micro-Theory. (3)** Gisser
Prerequisites: 500, Math 314. <Fall>

***503. Seminar in Economic Theory and Applied Economics. (3)‡**
Recent developments in the testing and application of alternative economic theories. Prerequisite: permission of instructor.

***504. Quantitative Analysis II. (3)**
(See B&AS 501.)

***505. Macro-economic Theory. (3)** Van Cott
Comparative statics, dynamics, and money flows. Prerequisites: 303, Math 180-181. <Spring>

***506. Advanced Macro-economic Theory. (3)** Van Cott
Fiscal policy, monetary policy, and models of economic growth. Prerequisites: 505 and Math 314. <Fall>

***507. Programming and Growth. (3)**
Recent developments in mathematical programming and growth models. Prerequisites: 407 and Math 314.

***508. Data Construction and Evaluation in Economics. (3)** Brown
Topics in economic data analysis including errors in measurement, sample survey methods, theory of aggregation, interpretation, and testing of economic theories. Prerequisites: 289, 407. <Spring>

***509. Econometrics. (3)** Brown
Introduces student to theoretical econometric models and will include static theory with exact equations, static theory with stochastic equations, dynamic theory with exact equations, and dynamic stochastic theory. Prerequisites: Math 180, 181, 314, 345, and 346.

***510. Econometrics. (3)** Brown
Empirical methods in econometrics with emphasis upon the identification of econometric parameters, statistical estimation, and statistical testing. Prerequisite: 509.

***511. History of Economic Thought. (3)** Tailby
The contributions of the great economists to the development of economic doctrine. Prerequisite: graduate status in Economics or permission of instructor.

***512. Economic History. (3)** Tailby
The evolution of the economic order, its changes, causes and effects, and the impact of changing institutions on economic life. Prerequisite: graduate status in Economics or permission of instructor.

***515. Theory of Money and Banking. (3)** Chung, Parker
Major developments in monetary and banking theory. Prerequisite: 303 or 315.

***516. Monetary Problems and Policies. (3)** Chung, Parker
Treatment of important contemporary monetary problems and major issues in monetary policies. Prerequisite: graduate standing in Economics.

***520. Seminar in Labor Economics. (3)** Barth, Cohen, Gregory
Prerequisite: 320 or equivalent and permission of instructor.

***521. Comparative Labor Movements. (3)** Cohen
Theories of trade union movements. International labor movements. National movements in Western Europe, the Socialist States, and the underdeveloped nations. Prerequisite: 320 or equivalent and graduate standing.

***531. Standards and Levels of Living. (3)** Hamilton
An analysis of the determinants of levels and standards of living, income distribution, and the use of budget studies and expenditure studies. Prerequisite: graduate status in Economics or permission of instructor.

***532. The Theory of Consumption. (3)** Hamilton
The traditional theory of consumer preference, behaviorist theory, and modern interdisciplinary theory of consumer behavior. Prerequisite: graduate standing in Economics or permission of instructor.

***542. Seminar in Natural Resource Planning. (3)** Ben-David, Wollman
Micro-economic applications and systems analysis, economics of exhaustible resources. Prerequisite: 300 or 500.

***543. Seminar in Natural Resource Planning. (3)** Ben-David, Wollman
Macro-economic analysis of natural resource problems, public investment, growth and international trade in natural resources. Prerequisite: 303 or 505.

***544. Special Topics in Environmental Economics. (3)** Ben-Davis, Kneese
Application of advanced economic analysis to current environmental problems. Prerequisite: 300 or equivalent. <Fall>

****546. Economic Education. (2 or 4)** Parker, Doxtator
(Also offered as Bus Ed 546 and Sec Ed 546.) A survey of those areas of economics most relevant to contemporary secondary school curriculum: comparative economic systems, role of government, poverty, international economic problems, etc. Guidance in introduction of economics into the classroom. Examination, development, and evaluation of instructional materials. <Summer only>

***551-552. Problems. (2-3 hrs. per semester)**

***560. Theory of Public Finance. (3)** Boyle, Church, Therkildsen
Economic theory and its application to the public economy: welfare economics and other theoretical tools applied to taxation, public expenditure, and public debt. Prerequisite: permission of instructor.

***562. State and Local Finance. (3)** Boyle, Church, Therkildsen
An analysis of the economics of state and local expenditures, taxation and administration of public funds. Particular attention to the problems, policies and practices in New Mexico and neighboring states. Prerequisite: 350 or graduate status in Economics or permission of instructor.

***565. Seminar in Fiscal Policy. (3)** Boyle, Therkildsen
An analysis of the effects of fiscal policy upon: (1) the level of employment and prices; (2) the rate of growth; and (3) the distribution of income. Prerequisite: graduate status in Economics.

***570. Institutional Economics.** (3) Hamilton
The "American contribution" to economic thought as found in the work of Veblen, Mitchell, Commons, and other institutional economists. Prerequisite: graduate status in Economics or permission of instructor.

***578. Economic Planning.** (3) Jonas
Theoretical formulations of economic interdependence; static consistency. Applications of short- and long-run dynamic sectoral and multi-sector planning models of the closed- and open-loop varieties. Prerequisite: 303. <Spring>

***579. Monetary Aspects of International Economics.** (3) Van Cott
Price and income mechanisms of balance of payments adjustment, fixed versus flexible exchange rates, capital movements, international monetary institutions and their reform. Prerequisite: 424 or permission of instructor.

***580. International Trade Theory.** (3) Hufbauer
Theory of trade and welfare and its applications. Prerequisite: 424 or permission of instructor.

***582. Theories of Economic Development and Growth Models.** (3) Hufbauer
Theories and controversies in economic development and their policy implications.

***583. Seminar in Economic Development with Particular Application to Latin America.** (3) Gregory
Economic theory applied to case studies in development. Prerequisite: graduate status in Economics or permission of instructor.

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler, Schwerin
(Also offered as Anth, Hist, Ib-Am, Lat Am, 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. (3-9 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 Prof. David Hamilton in the Department of Economics, who is the adviser to all students in the Program.

This major is directed toward a deepened 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 three hours to be selected from 320, 332, 340, 350, 422 or 424; Philosophy, twenty-one hours selected from courses chosen in consultation with your adviser.

MINOR STUDY

Not offered.

***485. Philosophical Foundations of Economic Theory.** (3) Evans, Hamilton
Philosophical backgrounds of classical and neo-classical, socialist and communist, and institutionalist economics. Prerequisite: Econ 201. <Spring 1973 and alternate years>

EDUCATION, ART

ASSOCIATE PROFESSOR D. J. McIntosh (Chairman); ASSISTANT PROFESSORS P. Peterson, J. Srubek, N. Townsend, B. Vogel; ADJUNCT PROFESSORS R. Johnson, F. McCullough

CURRICULUM

See p. 211.

MINOR STUDY

See p. 212.

110. Creative Art in Elementary School. (3)
Developing art awareness through comprehension and expression. <Summer, Fall, Spring>

115. Creative Craft in Elementary School. (3)
Developing craft awareness through comprehension and participation. <Summer, Fall, Spring>

120-121. Techniques of Craft Education. (1-3, 1-3)
Beginning crafts. <Fall, Spring>

130-131. Techniques of Design Education. (3, 3)
Design in everyday life. <Fall, Spring>

210. Creative Art in Secondary School. (3)
Fundamentals of art education. <Summer, Fall, Spring>

211. Creative Art K-9. [Creative Art in Secondary School] **(3)**

220. Pre-teaching Experience in Art. (3-6)‡‡
Introductory art teaching. Required for screening into Art Education. <Summer, Fall, Spring>

351. Problems. (1-3)

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
Prerequisites: 110-115 or 210-211; 220; corequisite: 401. <Summer, Fall, Spring>

401. Children and Art. (3)
Pre-school through adolescence. <Spring>

***402. Children and Art, Student Teaching Seminar. (3)**
Pre-school through adolescence. Co-requisite: 400. For Art Education majors only. <Offered upon demand>

***410. Creative Paper Crafts. (3)** <Offered upon demand>

***429. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.**

***434. Teaching Art in Secondary School. (3)**
Objectives, motivation, and procedures. Corequisite: 461. <Spring>

***447. Topics. (1-3)**

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Corequisite: 434. <Summer, Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
<Summer, Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)
<Summer, Fall, Spring>

***500. Seminar. (1-3)‡** McIntosh
<Summer, Fall, Spring>

***529. Workshop. (1-3)**
For degree restrictions consult the **Graduate School Bulletin.**

***547. Topics. (1-3)**

***551-552. Problems. (1-3 hrs each semester)**

***561. Practicum in the Supervision of Instruction. (3)**
(See C&I 561.)

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‡‡ May be repeated for a maximum of 6 hours.

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***610-611. Internship I and II. (3-6, 3-6)**
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

***699. Doctoral Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

EDUCATION, BUSINESS

See Education, Secondary

EDUCATION, CURRICULUM AND INSTRUCTION (GENERAL)

The Department of Elementary Education and the Department of Secondary Education (see these departments for faculty listing) jointly offer graduate and undergraduate courses in the area of Curriculum and Instruction. Also available through these departments is a graduate plan leading to the award of Education Specialist in Curriculum and Instruction (Sixth-Year Program). See the **Graduate School Bulletin** for further information.

***429. Workshop. (1-4)**
For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.**

***431. Audio-Visual Methods and Technology.** [Audio-Visual Methods and Equipment] **(3)**
(Also offered as Lib Sc 431.) Application of technology to instruction. Includes evaluation and utilization of materials, operation of media equipment, and some production of materials for classroom use. Laboratory fee required. <Summer, Fall, Spring>

***432. Production of Instructional Materials.** [Production of Instructional Materials for the Classroom] **(3)**
(Also offered as Lib Sc 432.) Production of a variety of instructional materials for specific purposes chosen by the students themselves. Includes graphics, overhead transparencies, darkroom and motion picture photography, and audio recording. Laboratory fee required. <Summer, Fall, Spring>

***435L. Remedial Reading Problems. (3)** Van Dongen, Walters, Zintz
Includes 1-3 hrs. supervised laboratory each week. Prerequisite: El Ed 431 or permission of instructor. 3 lectures, 1 hr. lab. <Summer, Fall, Spring>

***447. Topics. (1-3)**

***460. Organization and Operation of Media Centers. (3)**
(Also offered as Lib Sc 460.) Concentrated study of organization of book and non-book collections, of facilities and services related to the production and distribution of materials and equipment, and of photographic and television facilities which can be found in a media center. Also emphasis on principles of management as applied to school libraries and media centers. Prerequisite: 431. <Spring, Summer>

***480. Second Language Pedagogy. (3)**
(Also offered as M Lang 480)

***481. Education Across Cultures in the Southwest (3)** Zintz
Educational implications of the Pueblo, Navajo, Apache, and Spanish-American cultures. Research on New Mexico school problems will be reviewed and evaluated. <Summer, Fall, Spring>

***482. Teaching English as a Second Language. (3)** Brodkey, Spolsky, Ulibarri, White, Zintz
Pre- or corequisite: Engl 440 or equivalent. <Summer, Fall, Spring>

***500. Advanced Instructional Strategies. (3)**
(Also offered as Sec Ed 500) Examination and study of recent developments in the field of instructional theory and its application to the classroom. <Spring>

***515. Remedial Teaching Techniques. (3)** Walters, Zintz
Diagnosis of learning difficulties; developmental and corrective measures for use with individual learners. <Summer, Spring 1972 and alternate years>

***529. Workshop.** (1-4) <Offered upon demand>

***530. Adult Education.** (3) Cordova
(Also offered as Ed Adm 530.) Origin, development, philosophy, objectives, methods, and materials. <Spring>

***532. The Reading Process.** (3) Van Dongen, White, Zintz
Reading and perception; visual and auditory perception in word recognition; psychological and physical factors involved in vision and hearing; visual and auditory tests; neurological impairment and learning disabilities. Uses of mechanical aids in reading improvement; psychology of learning and theory of measurement applied to reading; cognition; affect; reading and semantics; sociology of reading. Prerequisites: 535 and El Ed 531. <Summer 1973 and alternate years, Spring>

***535L. Practicum in Learning Disabilities (Reading).** (3) Van Dongen, Zintz
Tutoring severely disabled readers under supervision. Includes 3 hr. supervised laboratory each week. Prerequisites: 435 and El Ed 531 or Sec Ed 520. 3 lectures, 1 hr. lab. <Summer, Fall, Spring>

***541. Principles of Curriculum Development.** (3) Drummond, Howard, Ivins, Mann
Social, philosophical, and psychological bases related to principles of curriculum development at all levels of education. <Summer, Spring 1973 and alternate years>

***547. Topics.** (1-3)

***560. Supervision of Instruction (Elementary and Secondary).** (3) Auger, Drummond, Ivins, Pohland
(Also offered as Ed Adm 560.) Purposes of supervision in the instructional program; theory and nature of instructional leadership; supervision as group leadership; classroom visitation and conferences as supervisory techniques; and evaluation of supervision. Special attention to role of principal and general supervisor in instructional improvement. <Summer, Fall, Spring>

***561. Practicum in the Supervision of Instruction.** (3) Auger, Ivins
Combines a structured seminar in the content and techniques of supervision with a supervised practicum in the supervision of instruction. **May be repeated for a maximum of 12 hours.** <Fall, Spring>

***570. The Analysis of Teaching Physical Education.** (3) Locke
(Also offered as P E 570) An examination of models and instruments for the behavioral analysis of teaching and their application to physical education. Prerequisite: permission of instructor. <Summer, Fall>

***581. Bilingual Education.** (3) Gonzales, Spolsky, Ulibarri, Zintz
Prerequisite: 481. <Summer, Spring>

***601. Curriculum Appraisal and Improvement of School Programs.** (3) Crawford, Howard, Ivins
(Also offered as Sec Ed 601.) A practicum in analysis and judgment making of the effectiveness of school practices in accord with recommendations of professional organizations, local school-community factors and with consideration for newer concepts and approaches such as team teaching, programmed instruction, flexible scheduling, independent study and use of resource centers. <Fall>

***610-611. Internship I and II.** (3-6, 3-6)
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

EDUCATION, EDUCATIONAL ADMINISTRATION

ASSOCIATE PROFESSOR R. E. Blood (Chairman); PROFESSORS R. Lawrence (Dean), P. V. Petty, R. Tonigan, C. C. Travelstead, H. Ulibarri; ASSOCIATE PROFESSORS J. Aragon, M. Burlingame, R. L. Holemon (Associate Dean), H. Lavender; ASSISTANT PROFESSORS I. Cordova, J. Hale, P. Pohland.

The programs offered in this department are at the graduate level. Information concerning these programs is contained in the **Graduate School Bulletin.**

***412. Public Education in New Mexico.** (3) Aragon, Petty
A comprehensive survey of the New Mexico public school system and its tax supported system of higher education. <Fall, Spring>

***429. Workshop. (1-4)**
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

***447. Topics. (1-3)**

***509. Introduction to Educational Administration. (3)** Burlingame, Cordova
An overview of the field of educational administration including school organization, operational areas, and principles. Required of all school administration majors. <Summer, Fall, Spring>

***510. School-Community Relations. (3)** Burlingame
The underlying principles of satisfactory and constructive relationships between the school and the community along with the development of practices which will implement these principles. <Fall, Spring>

***520. The School Principalship. (3)** Blood
The organizational, administrative, and supervisory responsibilities of the school principal —elementary and secondary. <Summer, Fall, Spring>

***521. Public School Finance. (3)** Hale
Basic principles underlying the financing of public schools. Special attention is given to New Mexico. <Fall>

***522. School Business Management. (3)** Petty, Tonigan
Practices in school budgeting, purchasing, funds accounting, auditing, payroll administration, supply management, and miscellaneous business transactions. <Spring>

***526. Educational Planning and the School Plant. (3)** Tonigan
The teaching-learning concepts involved in the planning of desirable school plants. Prerequisite: a course in curriculum. <Summer, Spring>

***529. Workshop in Educational Administration. (1-4)**
For degree restrictions consult the **Graduate School Bulletin.** <Offered upon demand>

***530. Adult Education. (3)**
(Also offered as C&I 530.) Origin, development, philosophy, objectives, methods, and materials. <Spring>

***531. Administration of Staff Personnel. (3)** Pohland
The principles of educational administration applied to the organization and administration of the staff personnel. <Summer, Spring>

***532. Current Educational Problems. (3)**
A group study of specific problems in education. Usually offered as an off-campus course. <Summer, Fall>

***547. Topics. (1-3)**

***551-552. Problems. (1-3 hrs. each semester)**

***560. Supervision of Instruction (Elementary and Secondary.) (3)** Auger, Drummond, Ivins, Pohland
(Also offered as C&I 560.) Purposes of supervision in the instructional program; theory and nature of instructional leadership; supervision as group leadership; classroom visitation and conferences as supervisory techniques; and evaluation of supervision. Special attention to role of principal and general supervisor in instructional improvement. <Summer, Fall, Spring>

***561. School Law. (3)** Hale
Legislation and court decisions, with special reference to New Mexico school law. <Summer, Fall>

***564. School and Community Surveys. (3)** Tonigan
Practices and techniques in all phases of school and community surveys. <Fall>

***571. State and Federal Educational Administration. (3)** Burlingame
State school systems; federal and state policy; and forms of control. <Fall, Spring>

***581. Seminar in Educational Administration. (3)**
Advanced reading and problem study in educational administration. Required of majors; others may be admitted upon consultation with instructor. <Summer, Fall, Spring>

***612-613. Field Experiences in Educational Administration. (3, 1-3)**
Planned, practical experiences in connection with the actual administration of a school system. Designed to provide supervised administrative practice for those school administration students who lack actual experience. <Offered upon demand>

*626. **Educational Buildings and Equipment.** (3) Tonigan
Problems of building construction and maintenance. Standards and practices. Field trips are included. Prerequisite: 526. <Offered upon demand>

*629. **Seminar for Practicing School Administrators.** (1-3)
A graduate seminar for practicing school administrators offered only during summer sessions. It provides study of the latest practices and trends in specialized areas of school administration. <Offered upon demand>

*630. **Administration in Higher Education.** (3) Blood, Holemon
An overview of higher education principally for students who are likely to have some administrative as well as teaching responsibilities in higher education. Prerequisite: master's degree or permission of instructor. <Spring>

*699. **Doctoral Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

EDUCATION, EDUCATIONAL FOUNDATIONS

PROFESSORS L. Rosasco (Chairman); J. G. Cooper[2], T. Zepper; ASSOCIATE PROFESSORS D. L. Bachelor, L. A. Dahmen, V. P. John, W. P. Moellenberg, J. C. Moore, P. E. Resta (Assistant Dean), A. W. Vogel; ASSISTANT PROFESSORS C. Becknell, D. Berch, P. Blackwell, D. Chavez, J. Fashing, M. Harris.

Explanation of footnotes not indicated will be found on p. 296.

247. **Topics.** (1-3)

284. **Afro-American History.** (3) Becknell
(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, Vogel, Zepper
An introduction to the philosophical, social, historical, and comparative foundations of education. <Summer, Fall, Spring>

292. **Introduction to the Study of Language.** (3 or 4)
(See Ling 292.)

300. **Human Growth and Development** (1-3) Berch, Dahmen, Harris, John, Moellenberg
Principles of growth and development and implications for the school curriculum. <Summer, Fall, Spring>

310. **Learning and the Classroom.** (3) Berch, Blackwell, Dahmen, Harris
The basic principles of learning and their application to classroom situations. <Summer, Fall, Spring>

351. **Problems.** (1-3)

352. **African Politics.** (3) Criddle
(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.

383. **Education of the Mexican-American: Trends, Issues, Problems.** (3) Bransford, Serrano
(Also offered as Spc Ed 383)

*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: courses 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>

*416. **Workshop in Intercultural Relations.** (4)
(Also offered as Soc 416.) <Offered upon demand>

*421. **Sociology of Education.** (3) Bachelor, Fashing
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) Serrano
(Also offered as Anth 422.) An overview of educational implications from the field of anthropology. <Offered upon demand>

***429. Workshop in Foundations of Education.** (1-4)‡
For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

***447. Topics.** (1-3)

***474. Evaluation in the School Curriculum.** (3) Blackwell, Cooper, Moellenberg, Moore
An analysis of the educational and psychological tests used in a school testing program. <Summer, Fall, Spring>

***500. Research Applications to Education.** (3) Cooper, Harris, Resta
Application of research findings to educational problems. Emphasis is on the consumption of research rather than the production. <Summer, Fall, Spring>

***501L. Research Methods in Education.** (3) Berch, Cooper, Dahmen, Harris, Moellenberg
Required of candidates for a graduate degree in the College, except that M.A. candidates may, with approval of their departments, take 500. Methods, techniques, and designs of educational research. Elementary statistics and data processing are taught in assigned laboratory sections as part of this course. 2 hrs. lecture, 1 hr. lab. <Summer, Fall, Spring>

***502. Seminar.** (3)‡
Studies in the foundations of education as determined by staff interests and departmental needs. <Offered upon demand>

***503. Seminar in Human Growth and Development.** (3) Berch, Dahmen, Harris, Moellenberg
Research oriented seminar; implications for classroom practices. <Fall, Spring>

***504. Computer Applications in Educational Research.** (3) Cooper, Moore
Designed to acquaint graduate students already competent in the methodology of educational research with the possibilities afforded by computers for educational problem solving. Course involves both theory and practice. Prerequisite: 501 or permission of instructor. <Offered upon demand>

***510. Seminar in Classroom Learning.** (3) Berch, Blackwell, Dahmen, Harris
A comprehensive examination of selected learning theories with reference to their application in classrooms or other learning situations. Prerequisite: upper division or graduate course in Learning or Educational Psychology. <Fall>

***515. Comparative Philosophies of Education.** (3) Vogel, Zepper
Inquiry into differences of basic outlook and their implications for educational practice of competing philosophical positions. <Offered upon demand>

***516. Educational Classics.** (3) Zepper
A philosophical critique of outstanding educational and philosophical works taken from lists of educational classics. Primary source readings are the basis of study. Prerequisite: 415 or equivalent work in philosophy. <Offered upon demand>

***517. Educational Ideas in Literature.** (3) Vogel, Wright
An investigation into the educational ideas found in works of literature of the world. <Offered upon demand>

***518. Comparative Education.** (3)‡ Bachelor, Zepper
A comparative and evaluative study of the purposes, objectives, organization, and methodology of contemporary educational systems of representative European, Latin American, and Afro-Asian countries. Prerequisite: permission of instructor. <Offered upon demand>

***533. Behavior Modification in Education.** (3) Harris
Theory and practice in behavior modification in educational situations. <Fall>

***547. Topics.** (1-3)‡

***551-552. Problems.** (1-3 hrs. each semester)

***555. Seminar in Linguistics and Language Pedagogy** (1-3) John, Rigsby, Spolsky, Springer
(See Ling 555.)

***574. Theory and Construction of Educational Measures.** (3) Blackwell, Harris, Moore
This course deals at an advanced level with the mathematical theory and the statistical methods used in the construction, analysis, and interpretation of measures employed in educational research and practice. Prerequisite: 474 or similar course, or permission of instructor. <Offered upon demand>

***581. Seminar: Sociology of Education. (3)** Bachelor, Fashing
(Also offered as Soc 581.) Opportunity for students with appropriate backgrounds in Sociology or Education to gain experience in field research projects chosen by instructor or by agreement. <Summer, Fall, Spring>

***603. Research Design and Statistics in Education. (3)** Blackwell, Cooper, Harris, Moore
Application of advanced techniques in statistical treatment of education data. These techniques include testing experimental hypotheses, regression and prediction, analysis of variance, non-parametric methods, and partial and multiple correlation. Prerequisite: a course in statistics. <Summer, Fall, Spring>

***604. Multivariate Design and Analysis in Educational Research. (3)** Blackwell, Cooper, Moore
Advanced techniques of regression, factor analysis, canonical analysis, and multiple discriminent analysis are applied to educational problems. Computer applications of these techniques will be stressed. Prerequisite: 603. <Offered upon demand>

***610-611. Internship I and II. (3-6, 3-6)**
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

***645. Advanced Seminar in Foundations of Education (3)‡**
For doctoral and master's students in Education. Ideas, concepts, problems, research and critical issues facing education today. Designed to help students integrate and synthesize course work taken in Education and cognate fields, as this work may be related to and helpful in the solution of the problems under consideration. Individual student preparation and reports followed by critical reaction from other students and faculty members participating in the seminar. <Offered upon demand>

***650. Dissertation Seminar. (1)** Cooper, Harris
For doctoral students planning dissertation research. Recent advances in data processing, critical examination of design of projects and related issues. Corequisite: 699.

***699. Doctoral Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

EDUCATION, EDUCATIONAL MEDIA

The area of Educational Media includes library science and audiovisual 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, 431, 437, 460, and at least 6 hours from the following: 351, 432, 441, or 451.

MINOR STUDY FOR UNDERGRADUATES IN ARTS AND SCIENCES

Lib Sc 424, 425, 427, 430, 431, 460, and either 429 or 451.

LIBRARY SCIENCE

351. Problems. (1-3) <Offered upon demand>

***424. Fundamentals of Library Science.** (3)
A survey of the history of libraries; social forces affecting the objectives and functions of modern libraries; types of library service; the library profession, its philosophy, publications, and organizations; major trends and problems. <Fall>

***425. Reference and Bibliography.** (3)
Study of materials and methods for locating information in general works, encyclopedias, dictionaries, indexes, biographical works, film and filmstrip guides, and other major tools in subject fields. <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 non-book materials. <Spring>

***429. Workshop.** (1-4) <Offered upon demand>

***430. Reading Guidance.** (3)
Study of research concerning reading with implications for libraries; reading interests and habits and evaluation of books for various purposes; advisory services in relation to the library's general educational function. <Offered upon demand>

***431. Audiovisual Methods and Technology.** [Audio-Visual Methods and Techniques] (3)
(Also offered as C&I 431.) The application of technology to instruction. Includes evaluation and utilization of materials, operation of media equipment, and some production of materials for classroom use. Laboratory fee required. <Summer, Fall, Spring>

***432. Production of Instructional Materials.** [Production of Instructional Materials for the Classroom] (3)
(Also offered as C&I 432.) Production of a variety of instructional materials for specific purposes chosen by the students themselves. Includes graphics, overhead transparencies, darkroom and motion picture photography, and audio recording. Laboratory fee required. <Summer, Fall, Spring>

***437. Selection of Materials for Libraries and Media Centers.** [Selection of Materials for Libraries] (3)
Study of the principles and practices for building collections of print and non-print materials. Includes sources, criteria and tools for selection, and acquisition policies for the media center. <Summer, Fall>

***441. Children's Literature.** (2)
(Also offered as El Ed 441.) Pre- or corequisite: El Ed 331. <Summer, Fall, Spring>

***451. Books and Related Material for Young Adults.** [Books and Related Material for Young People] (3)
A survey of books and non-book materials suitable for students of junior and senior high school age. Emphasis on utilization and evaluation of materials, adolescent reading, viewing and listening interests, and reading guidance for curriculum and personal needs. <Summer, Fall>

***460. The Organization and Administration of Media Centers.** (3)
(Also offered as C&I 460.) A concentrated study of the organization of book and non-book collections, of facilities and services related to the production and distribution of materials and equipment, and of photographic and television facilities which can be found in a media center. Also emphasis on principles of management as applied to school libraries and media centers. Prerequisite: 431. <Summer, Spring>

EDUCATION, ELEMENTARY

PROFESSOR D. W. Darling (Chairman), H. D. Drummond, M. Hughes, M. V. Zintz; ASSOCIATE PROFESSORS K. Auger, D. Gonzales, C. S. Loughlin, J. S. Mann, B. Spolsky, L. H. Walters; ASSISTANT PROFESSORS C. Acosta, D. Brodkey, M. L. Ulibarri, R. Van Dongen, H. Weaver, J. Woods; INSTRUCTORS V. Mills, L. Wolfe.

CURRICULA

See p. 214.

§100. **Directed Experiences with Children for Auxiliary Personnel, Level I.** (1-6) Peterson, Wolfe <Fall>

§129. **Workshop: The Paraprofessional in the Classroom.** (1-6) Peterson, Wolfe <Fall>

§200. **Directed Experiences with Children for Auxiliary Personnel, Level II.** (1-6) Peterson, Wolfe
Prerequisite: 100. <Fall, Spring>

§229. **Workshop: Working with Children in Elementary Schools.** (1-6) Peterson, Wolfe
Prerequisite: 129. <Fall, Spring>

247. **Topics.** (1-3)‡

305. **Teaching in the Kindergarten-Primary Years.** (3) Hughes, Loughlin, Weaver
Strategies and materials of effective learning experiences and classroom organization for young children. <Spring>

319. **Physical Education in the Elementary School.** (2) Hinger, Moolenijzer
(Also offered as PE 319.) Five class meetings a week <Summer, Fall, Spring>

321L. **Teaching of Social Studies in the Elementary School.** (3) Drummond
3 lectures, 1 hr. lab. <Fall, Spring>

331L. **Teaching of Reading in the Elementary School.** (3) Auger, Gonzales, Van Dongen, Walters, Zintz
3 lectures, 1 hr. lab. <Fall, Spring>

333L. **Teaching Oral and Written Language in the Elementary School.** [Teaching of Oral and Written English in the Elementary School] (2) Loughlin, Ulibarri, Walters
2 lectures, 1 hr. lab. <Fall, Spring>

341. **Techniques of Literary Presentations.** (3) Gonzales, Walters
An exploration of the art and materials of storytelling in schools and recreation centers. Folk and fairy tales, myths, legends, fables, epic and hero tales, and realistic stories will be studied, presented, and evaluated. <Offered upon demand>

351. **Problems.** (1-3) <Summer, Fall, Spring>

353L. **Teaching of Science in the Elementary School.** (3) Tweeten
Prerequisites: 1 yr. biological science; 1 yr. physical science. 3 lectures, 1 hr. lab. <Summer, Fall, Spring>

361L. **Teaching of Mathematics in the Elementary School.** (2) Darling, Woods
Prerequisites: Math 111, 112. 2 lectures, 1 hr. lab. <Fall, Spring>

400. **Student Teaching in the Elementary School.** (3-6-9-12-15) Auger, Loughlin
Pre- or corequisites: 321, 331, 333, 353, 361. See also additional requirements on p. 207. Special fee of $10 is charged. <Fall, Spring>

*405. **Curriculum for Early Childhood.** (3) Hughes, Loughlin, Weaver
Education of children 2-5. Prerequisite: H Ec 408L. <Spring and Summer 1972 and alternate years>

*421. **The Social Studies Program in the Elementary School.** (3) Drummond
Prerequisite: 321. <Summer 1972 and alternate years, Fall>

*429. **Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

*431. **The Reading Program in the Elementary School.** (2 or 3) Auger, Gonzales, Van Dongen, Walters, Zintz
Prerequisite: 331. <Summer, Fall, Spring>

*433. **Oral and Written Language Program in the Elementary School.** [The Oral and Written English Program in the Elementary School] (2-3) Loughlin, Ulibarri, Walters
Prerequisite: 333. <Summer, Fall>

*441. **Children's Literature.** (2) Gonzales, Walters
(Also offered as Lib Sc 441.) Pre- or corequisite: 331. <Summer, Fall, Spring>

*447. **Topics.** (2 or 3)

*453. **The Science Program in the Elementary School.** (3) Tweeten
Prerequisite: 353.

*461. **The Mathematics Program in the Elementary School.** (3) Darling, Woods
Prerequisite: 361. <Summer 1972 and Fall 1973 and alternate years>

§ Open to students in the A.A. in Educ (Elem) program only.

***470. Supervision of Student Teaching in Elementary Schools. (3)**
Overview of teacher preparation programs including program at UNM. Restricted to cooperating teachers working with program. Prerequisite: graduate or non-degree status.

497. Reading and Research in Honors. (3-6)
Prerequisite: see p. 202. <Fall, Spring>

***505. Seminar in Early Childhood Education. (3-12)** Hughes, Loughlin
Current literature and research in early childhood education; implications for curriculum decision. Prerequisite: 405. <Summer 1973 and alternate years, Fall>

***511. Curriculum in the Elementary School. (3-12)** Auger, Darling, Drummond
Problems in selecting, organizing, and presenting content in the elementary school. <Summer, Fall>

***521. Seminar in the Social Studies. (3-12)** Drummond
Prerequisite: 421. <Summer 1972 and alternate years>

***529. Workshop. (1-4)**
For degree restrictions consult the **Graduate School Bulletin**. <Offered upon demand>

***531. Seminar in Teaching Reading. (3-12)** Auger, Gonzales, Van Dongen, Walters, Zintz
Prerequisite: 431. <Summer, Fall>

***533. Seminar in the Language Arts. (3-12)** Ulibarri, Walters, Zintz
Prerequisite: 433 <Summer 1972 and alternate years, Spring>

***541. Seminar in Children's Literature. (3-12)** Gonzales, Walters
<Summer and Fall 1972 and alternate years>

***547. Topics. (1-3)**

***551-552. Problems. (1-3 hrs. each semester)**
Prerequisite: Ed Fdn 500 or 501L.

***553. Seminar in Teaching Elementary Science. (3-12)** Tweeten
Prerequisite: 453. <Summer>

***561. Seminar in Teaching Elementary Mathematics. (3-12)** Darling, Woods
Prerequisite: 461. <Summer 1972 and Spring 1973 and alternate years>

***599. Master's Thesis. (1-6 hrs. per semester)**
Prerequisite: Ed Fdn 501L. See the **Graduate School Bulletin** for total credit requirements.

***610-611. Internship I and II. (3-6, 3-6)**
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

***699. Doctoral Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

EDUCATION, GUIDANCE AND SPECIAL EDUCATION

ASSOCIATE PROFESSOR L. C. Bernardoni (Chairman); PROFESSOR G. L. Keppers; ASSOCIATE PROFESSORS N. Abeyta, G. W. Adamson, L. A. Bransford, W. R. Fishburn, R. L. McDowell, R. Micali, F. Papcsy, G. VanEtten, B. Watson, H. Whiteside, G. A. Zick; ASSISTANT PROFESSORS C. Abe, J. Everett, M. J. Heisey, M. Patino, R. Rodriguez, Z. Swearengin (part-time), S. Winther, M. Works and new appointments to be made.

GUIDANCE

***410. Rehabilitation Concepts and Process. (3)** Abe, Fishburn
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>

***415. Foundations of Counseling (3)** Bernardoni, Zick
Designed to provide the student with a basis for examination and development of a meaningful philosophy of counseling services, and to understand the principles of counseling practices in keeping with that philosophy. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***429. Workshop in Counseling.** (1-3)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions, see p. 210 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

***430. Dynamics of Human Behavior.** (3) Heisey, Winther
To permit the student to achieve a broader base with respect to an 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) Abe, Heisey, Micali
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>

***447. Topics.** (1-3)

***510. Techniques of Parent-Teacher Counseling.** (3) Heisey, Micali
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. <Fall>

***512. Differential Diagnosis I.** (3) Heisey, Micali
To promote a competency in the administration, scoring, and diagnostic interpretation of various individual tests of intelligence that are commonly used in clinical and school settings. Stress will be placed upon theory, practical application, and diagnostic assessment dealing with young children through adulthood of both normal and exceptional groups. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***513. Socio-Economic Information in Counseling.** (3) Abe, Bernardoni, Keppers
The essential nature of environmental information in educational, vocational, and personal-social counseling services with emphasis on theories of vocational development and choice, and value systems. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***514. Organization and Supervision of Counseling Services.** (3) Keppers, Micali, Winther
Includes such topics as sound organization practice and patterns, understanding of the total pupil personnel program, qualifications and acquisitions of staff, facilities, budgetary needs, evaluation, and possible ways of initiating a counseling program. Prerequisite: permission of instructor. <Fall>

***515. Differential Diagnosis II.** (3) Heisey, Micali
To promote competency in the administration, scoring, and diagnostic interpretation of various individual and group tests of visual-motor-perceptual performance, psycholinguistic abilities, achievement, and auditory discrimination. Emphasis will be placed upon acquainting students to the use of these diagnostic instruments with a broad spectrum of the population representing various clinical groups of all ages. Prerequisite: permission of instructor. <Spring>

***516. Clinical Case Study.** (3) Abe, Abeyta, Micali
Develops the student's competency in collecting, organizing, synthesizing, and interpreting data for the clinical understanding of an individual. Report writing skills are emphasized, stressing the development of clinical and educational recommendations. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***517. Group Counseling.** (3) Fishburn, Zick
Theory, techniques, and applications of group methods in counseling. Students participate in ongoing groups and have the opportunity to engage in practical experience. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***518. Theories of Counseling** (3) Bernardoni, Heisey, Zick
Theories, techniques, and application of various systems of counseling and psychotherapy. Emphasis is on the development of counseling competencies consistent with the personality and philosophy of the individual counselor. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***519. Practicum in Counseling.** (1-6) Fishburn, Heisey, Micali
Experiential application and integration of principles, theories, and techniques of counseling in individual and group counseling situations. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***529. Workshop in Counseling.** (1-4)
For degree restrictions, consult the **Graduate School Bulletin.** <Offered upon demand>

***540. Counseling in the Elementary School.** (3) Heisey, Micali
A study of the procedures and methods for implementing an elementary counseling program. Prerequisite: permission of instructor <Spring>

***541. Counseling and Play Therapy with Children.** (3) Heisey, Keppers
To develop in the student the ability to utilize techniques of counseling and play therapy, and to provide experiences and applications that will provide insights into treatment methods and childhood problems. Prerequisite: permission of instructor. <Spring>

***547. Topics.** (1-3)

***550. College Personnel Work.** (3) Bernardoni, Whiteside
Philosophy and principles of college personnel services, as well as the nature and extent of various personnel services on college campuses. Prerequisite: permission of instructor. <Spring>

***551-552. Problems.** (1-3 hours each semester)

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

***610-611. Internship I and II.** (3-6, 3-6)
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

***620. Seminar in Counseling.** (3) Abe, Fishburn, Zick
Current problems and research in the field of counseling. Prerequisite: permission of instructor. <Fall>

***621. Advanced Theories of Counseling and Psychotherapy.** (3) Heisey, Zick
In-depth study of specific systems of psychotherapy as related to counseling methods with emphasis on various problems in living manifested by people seeking therapeutic counseling. Prerequisite: permission of instructor. <Fall>

***622. Advanced Group Counseling and Psychotherapy.** (3) Fishburn, Zick
Intensive study and application of group methods in which advanced students experience various group dynamics as participants and facilitators of groups. Prerequisite: permission of instructor. <Spring>

***630. Advanced Practicum in Counseling, Counselor Education, and Supervision.** (3-6) Fishburn, Zick
Experience in practical application and integration of counseling systems in a clinical setting. Experiences in conducting classes in counselor education. Experiences in supervision of beginning practicum students. Prerequisite: permission of instructor. <Fall, Spring>

***699. Doctoral Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

SPECIAL EDUCATION

MAJOR STUDY

Spc Ed 250, 271, 381, 440, 450, 473, 479, and 462 or 400, plus electives.

MINOR STUDY

Spc Ed 250, 271, 381, 440, 473, 479, and 462 or 400, plus electives.

CURRICULUM

See pp. 216-217.

250. Introduction to Special Education. (1 or 3)
Work experience and seminars in Special Education settings. Required of all undergraduates. Beginning Semester—1 hr. Second Semester—3 hrs. Masters students to take only if in a foreign field. Corequisite: 271. <Summer, Fall, Spring>

271. Education of the Exceptional Child (3)
Survey of the characteristics and educational needs of exceptional children. Co-requisite: 250. 271 or equivalent is required of all students in Special Education. <Summer, Fall, Spring>

302. Communicative Disorders. (3)
(Also offered as Com Ds 302.) Nature of communicative disorders, including speech, hearing and language disorders in children and adults. Methods of identification and remediation. Prerequisite: Com Ds or Sp Com 280, or permission of instructor. <Spring>

351. Problems. (1-3)
<Summer, Fall, Spring>

***381. Nature and Needs of the Mentally Retarded.** (3)
A study of the social, medical, emotional, physical and mental characteristics of the mentally retarded child. Methods of classifying, diagnosing and treating retarded children will be discussed from medical, psychological, sociological and educational points of view. Co-requisites: 250, 271. <Summer, Fall, Spring>

383. Education of the Mexican-American: Trends, Issues, Problems. (3)
(Also offered as Ed Fdn 383) A study of educational trends, issues and problems of the Mexican-American and the solutions necessary to alleviate these problems. Prerequisite: permission of instructor. <Summer, Fall, Spring>

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
Prerequisites: 250, 271, 381, 450, and 473. <Summer, Fall, Spring>

***419. Special Education in the Regular Classroom.** (3) Brooks, Siegel
A functional curriculum approach for educating the minimally handicapped child within the regular classroom with major emphasis on how and why to modify specific, definite learning experiences. Prerequisite: permission of instructor. <Summer, Fall, Spring>

***427. Problems of the Hearing-Impaired.** (3) Hood
(Also offered as Com Ds 427.) Problems encountered by the deaf and hard of hearing, including communication abilities, psychological and sociological adjustment, educational achievement, and vocational placement. <Fall, Spring>

***429. Workshops in Special Education.** (1-3)
Prerequisite: permission of instructor. <Offered upon demand>

***440. 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. Co-requisites: 250, 271. <Summer, Fall, Spring>

***444. Characteristics of the Emotionally Disturbed Child.** [The Emotionally Handicapped Child] (3)
An introductory course in the education of the emotionally handicapped child with emphasis on psychological, sociological and educational implications. Co-requisites: 250, 271. <Summer, Fall, Spring>

***447. Topics.** (1-3)

450. Adaptive Instructional Techniques in Special Education. (6)
A study of methods and techniques for the teaching of basic skill subjects to the exceptional child. Prerequisites: 250, 271, and permission of instructor. This course includes 2 hours of pre-student teaching. <Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisites: 250, 271, 381, 450, and 473. <Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)
<Summer, 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. Co-requisites: 250, 271, and permission of instructor. <Fall>

***473. Teaching the Mentally Retarded.** (3)
Objectives, curriculum, content, methods, organization of work. Prerequisites: 250, 271, and 381. <Summer, Fall, Spring>

***475. Education of Emotionally Disturbed Children.** (3)
Behavioral characteristics and causes of emotional and social deviancy in children as they affect education. Types of treatment and educational programs which can be provided within a school setting. Prerequisites: 444. **Graduate students only.** <Fall, Spring>

***476. Teaching the Neurologially Impaired.** [Teaching the Physically and Neurologically Impaired] (3)
A study of children who have learning disabilities due to neurological or unknown causes, and the techniques required for their education. Prerequisite: 271. <Summer, Fall, Spring>

479. Methods and Materials in Special Education. (3)
Culminating experience to be taken in conjunction with student teaching and 450. The interpretation, design, development, and implementation of methods and materials in

Special Education. Prerequisites: 250, 271, 381, 473. **Undergraduates only.** <Fall, Spring>

***481. Teaching Children with Learning Disabilities.** (3)
Identifying and educating children with learning disabilities. <Fall, Spring>

***521. Clinician Programs in Therapeutic Physical Education.** (3-6)
(Also offered as PE 521.) Clinical experience in the instruction of the mentally retarded in motor skills. Prerequisites: permission of instructor. <Spring>

523. Education of the Severely Retarded. (3)
To investigate the etiology, characteristics, curriculum development, and treatment programs for the severely retarded child and adult. Prerequisites: 381 and 473. <Spring>

***525. Clinical and Behavioral Aspects of the Emotionally Disturbed Child.** (3)
A comprehensive study of the causative factors in emotional disturbance and techniques of behavior modification in the treatment of emotionally handicapped children. Prerequisites: 444 and 475. <Spring>

***529. Workshops in Special Education.** (1-4)
<Offered upon demand>

***547. Topics.** (1-3)

***551-552. Problems** (1-3 hrs. each semester)
Prerequisite: permission of instructor. <Offered upon demand>

***571. Curriculum Development in Special Education.** (3)
The development of curriculum and materials which can be used to teach exceptional children at various maturational levels in the regular class, in special classes and schools. Prerequisites: 473, 475, 481, and permission of instructor. Sections will be offered at different semesters emphasizing either Mental Retardation, Emotionally Disturbed or Learning Disabilities. <Spring>

***573. Seminars in Special Education.** (3)
Sections will be offered at different semesters emphasizing either Mental Retardation, Emotionally Disturbed or Learning Disabilities. <Summer, Fall, Spring>

***574. Organization and Supervision of Special Education Programs.** (3)
Outlines organizational and administrative provisions for exceptional children; screening, identification, placement, and ancillary services within educational settings. Prerequisite: permission of instructor.

***577. Education of Gifted Children.** (3)
Programs for, and principles of, teaching the gifted. Prerequisite: 271. <Spring>

***578. Learning Disabilities.** [Advanced Techniques of Teaching Children with Learning Disabilities] (3)
A comprehensive study of the neurologically handicapped with a detailed emphasis on research and educational techniques. Prerequisites: 476 and permission of instructor. <Spring>

***579. Instructional Strategies in Special Education.** (3)
Culminating experience to be taken in conjunction with Practicum. Instruction in theory underlying instructional strategies in Special Education; development of materials and implementation of strategies. Prerequisite: permission of instructor; co-requisite: 580. <Summer, Fall, Spring>

***580. Practicum in Special Education.** (3-6)
Supervised participation in clinical practice, utilizing individual and group procedure, with exceptional children and their parents. Adaptation of clinical procedures to public school programs. Prerequisite: 12 hours of Special Education or approval of supervisor; co-requisite: 579. <Summer, Fall, Spring>

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements. <Summer, Fall, Spring>

***610-611. Internship I and II.** (3-6, 3-6)
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Fall, Spring>

***699. Doctoral Dissertation.** (3-9 hrs. per semester)
See the **Graduate Shool Bulletin** for total credit requirements.

EDUCATION, HEALTH, PHYSICAL EDUCATION AND RECREATION

PROFESSORS D. L. Hanson (Chairman), L. R. Burley, W. W. Clements, F. McGill, E. A. Scholer (Program Coordinator, Recreation), A. H. Seidler, E. M. Small (Program Coordinator, Health Education); **ASSOCIATE PROFESSORS** L. F. Diehm, P. Douglass, F. J. Hinger, N. Moolenijzer, F. E. Papcsy, C. L. Piper; **ASSISTANT PROFESSORS** H. A. Atterbom, J. A. Boaz, B. J. Bond, J. Hall, D. H. Hunt, R. M. Mitchell, J. K. Olson, D. S. Warder; **INSTRUCTORS** L. K. Estes, R. Jacobsen, J. H. Mechem; **ADJUNCT ASSISTANT PROFESSOR** R. Burgan; **LECTURER** F. N. Roche; **ADJUNCT INSTRUCTORS** D. Corbin, L. E. Willock; **ASSOCIATES IN PHYSICAL EDUCATION** R. Feldman, H. Hackett, N. Ellenberger, R. Leigh.

The Department offers a number of programs. The service program in Physical Education (see Non-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. 217-222.

PHYSICAL EDUCATION

NONPROFESSIONAL COURSES—PHYSICAL EDUCATION

Activity courses are offered both fall and spring semesters; swimming, golf, tennis, and horseback riding courses are also offered summer sessions.

101. Beginning Swimming. (1)
102. Intermediate Swimming. (1)
103. Advanced Swimming. (1)
Prerequisite: ability to swim.
104. Lifesaving. (1)
Prerequisite: ability to swim.
107. American Country Dance. (1)
108. Ballroom Dance. (1)
109. Beginning Contemporary Dance. (1)
111. Mexican & New Mexican Dance. (1)
112. International Folk Dance. (1)
115. Gymnastics. (1)
116. Apparatus Stunts. (1)
117. Individual Tumbling. (1)
118. Movement Fundamentals. (1)
119. Personal Defense. (1)
120. Wrestling. (Men Only) (1)
121. Weight Lifting. (Men Only) (1)
123. Wilderness Experiences. [Outward Bound] (1)
124. Developmental Physical Education. (1)
125. Badminton. (Women Only) (1)

126. **Beginning Golf.** (1)
127. **Intermediate Golf.** (1)
128. **Beginning Tennis.** (1)
129. **Intermediate Tennis.** (1)
130. **Bowling.** (1)
Special fee of $20 charged.
131. **Horseback Riding.** (1)
Special fee of $35 charged.
132. **Skin and Scuba Diving.** (1)
133. **Advanced Tennis.** (1)
134. **Advanced Golf.** (1)
135. **Basketball-Softball.** (1)
136. **Field Hockey.** (1)
137. **Flickerball-Bowling.** (1)
Special fee of $10 charged.
138. **Speedaway-Volleyball.** (1)
139. **Soccer.** (1)
140. **Volleyball-Badminton.** (1)
141. **Skiing.** (1)
Eight weeks course. Meeting times to be arranged. Special fees.
142. **Track and Field.** (Women only) (1)
143. **Ice Skating.** (1)
Meets twice weekly for 16 weeks. Special fee charged (Payable to Ice Arena).
144. **Beginning Judo.** (1)
145. **Casting and Angling.** (1)
149. **Therapeutic Physical Education.** (1)
Prerequisite: permission of University Health Service.

PROFESSIONAL COURSES—PHYSICAL EDUCATION

Some of the following courses are scheduled to meet more periods 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 per week is stated after the course description.

151. **Body Mechanics and Self-Testing Activities.** (1) Piper, Hall
Three class meetings per week. <Fall>
152. **Team Sports.** (1) McGill, Olson
Three class meetings per week. <Fall>
160. **Physical Fitness Programs.** (2) Atterbom, Hunt
The professional course in physical fitness programs. 4 class meetings per week. <Fall, Spring>
161. **Fundamentals of Basketball.** (2)
The professional course in the coaching of basketball. 4 class meetings per week. <Fall>
162. **Fundamentals of Football.** (2) Feldman
The professional course in the coaching of football. 4 class meetings per week. <Spring>
163. **Swimming.** (2) Mechem
The professional course in swimming. Prerequisite: ability to swim. 4 class meetings per week. <Fall, Spring>
201. **Gymnastics.** (2) Mitchell
The professional course in gymnastics. Prerequisite: 117. 4 class meetings per week. <Fall>
202. **Theory and Practice of Baseball.** (2) Leigh
The professional course in the coaching of baseball. 4 class meetings per week. <Fall>

203. Teaching of Wrestling. [Combatives] (2) Jacobsen
The professional course in wrestling. 4 class meetings per week. <Spring>

204. Theory and Practice of Track and Field. (2) Hackett
The professional course in the coaching of track and field. 4 class meetings per week. <Spring>

210. Folk Dance. (1) *King
Three class meetings per week. <Fall, Spring>

211. Individual and Dual Sports. (1) McGill, Olson
Three class meetings per week. <Spring>

301. Teaching of Sports. (2) Hunt
The professional course in recreational sports. Prerequisite: 160 or permission of instructor. 4 class meetings per week. <Fall, Spring>

302. Teaching of Sports. (2) Hunt
Continuation of 301. Prerequisite: 160. <Fall, Spring>

307. Team Sports in the Secondary School. (2) Olson
Prerequisite: 152 or permission of instructor. 4 class meetings per week. <Fall>

308. Individual and Dual Sports in the Secondary School. (2) McGill, Olson
Prerequisite: 211 or permission of instructor. 4 class meetings per week. <Spring>

309. Aquatics and Gymnastics. (2) Hall, Olson, Piper
Prerequisite: 115 and Red Cross Life Saving or permission of instructor. 4 class meetings per week. <Spring>

310. Folk Dance in the School Program. (2)
Prerequisite: 210 or permission of instructor. 4 class meetings per week. <Fall>

319. Physical Education in the Elementary School. (2) Hinger, Mooleniizer
(Also offered as El Ed 319.) 4 class meetings per week. <Summer, Fall, Spring>

326L. Physiology of Exercise. (3) Atterbom, Riedesel
(See Biol 326L.) <Fall>

345. Professional Laboratory Experiences in Physical Education. (1-3)
May be repeated to a maximum of 6 semester hours. <Fall, Spring>

351. Problems. (1-3) <Summer, Fall, Spring>

360. Officiating in Sports. (2) McGill, Olson
Discussion and practice in officiating techniques in soccer, speedball or field hockey, volleyball, basketball, etc. Prerequisite: permission of instructor. 4 class meetings per week. Not restricted to Education students. <Fall, Spring>

366. Teaching of Contemporary Dance. (2) Waters
Selection of methods and materials for teaching modern dance. 4 class meetings per week. <Spring>

373. The Treatment of Athletic Injuries. (2) Diehm <Fall, Spring>

397. Kinesiology. (4) Burley, Locke, Olson
The science of human motion. Prerequisites: Biol 136, 139L. <Fall, Spring>

398. Principles of Physical Education. (3) Hunt, Seidler
The aims and objectives of physical education: physiological, psychological, and sociological principles which underlie practices in the profession. Prerequisite: permission of instructor. <Fall, Spring>

399. Organization and Administration of Physical Education. (3) Clements
Program building including criteria for the selection of activities and progression, and other factors affecting course of study construction such as facilities, equipment, budget, laws, policies, professional responsibilities. Prerequisite: permission of instructor. <Fall, Spring>

400. Student Teaching in the Elementary School. (3-6-9, maximum total allowed 15)
<Fall, Spring>

***429. Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.**
<Summer>

444. Teaching of Physical Education. (3) Moolenijzer
(Also offered as Sec Ed 444.) <Fall>

***447. Topics.** (1-3)
<Summer, Fall, Spring>

452. Organization of Sports Programs. (3) Clements, Hunt, McGill
(Also offered as Recrea 452.) Organization and administration of games and sports in intra-mural, interschool, and community recreation programs. Prerequisite: permission of instructor. <Fall, Spring>

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisite: 444. <Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisite: 444. <Fall, Spring>

464. Theory of Football. (3) Feldman
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: senior standing. <Spring>

465. Theory of Basketball. (3) King
To review and enlarge the student's knowledge of the basic techniques of basketball and to acquaint him with the principles, techniques, and strategy of coaching basketball at the junior high, high school, and college levels. Prerequisite: senior standing. <Fall>

466. Special Physical Education. (3) Papcsy
The field of adaptive and corrective physical education and its relationship to the regular curriculum in PE. Prerequisite: 397. <Fall>

***467. Survey of Physical Defects.** (3) Papcsy
(Also offered as Spc Ed 467.) To investigate the etiology, characteristics, and treatment programs necessary for teaching the physically handicapped child. Prerequisite: Spc Ed 271 or permission of instructor. <Fall>

***486. Principles of Therapeutic Recreation and Physical Education.** (3) Papcsy
Philosophy, principles, relationships, and contributions of therapeutic recreation as background for the recreation leader, physical educator, hospital administrator, and other personnel. <Spring>

***488. Motor Learning and Performance.** (3) Locke
Psychological and neurophysiological factors related to the development of motor skill; emphasis on the teacher's role in facilitating learning. Prerequisite: Psych 210 or Ed Fdn 310, or permission of instructor. <Fall>

***489. Tests and Measurements in Physical Education.** (3) Burley
Techniques to determine abilities, needs, and placement in the physical education program. <Fall, Spring>

***490. Supervision of Physical Education Programs.** (3) Burley, Clements
Supervisory techniques stressing cooperative planning will be applied to city and county programs in New Mexico. Each student will be required to develop a problem in terms of his particular needs and situation. Prerequisite: permission of instructor. <Fall>

***491. Administration of Varsity Athletics.** (3) Seidler <Summer, Fall>

***492. History of Physical Education.** (3) Papcsy, Clements <Spring>

***494. Clinical Program for Corrective Therapy.** (3-6) Papcsy and Members of the Hospital Staff
Lectures and actual clinical experience in corrective therapy as integrated into the Physical Medicine and Rehabilitation program of a hospital. Prerequisite: open to Seniors and Graduate Physical Education majors. <Summer, Fall, Spring>

497. Reading and Research in Honors. (3-6)
Prerequisite: see p. 202. <Summer, Fall, Spring>

***504. Research in Physical Education.** (1) Locke
An examination of the role of research in the conduct of physical education programs. Attention given to the nature and status of programs for the preparation of research specialists in the area. Discussion of special problems related to research in physical education such as information retrieval, research development and research dissemination. Prerequisites: graduate standing, Ed Fdn 500 or 501 or 603 or equivalent experience. <Spring>

***505. Foundations for a Philosophy of Physical Education.** (3) Burley
Prerequisite: at least 3 hours in history, principles, or methods of physical education. <Summer, Fall>

***510. Curriculum Construction in Physical Education.** (3) Burley, Locke
<Summer, Spring>

***514. The Remedial Program in Physical Education.** (3) Papcsy <Summer, Spring>

***516. Seminar in Physical Education.** (3) <Summer, Fall, Spring>

***521. Clinical Program in Therapeutic Physical Education.** (3-6) Papcsy
(Also offered as Spc Ed 521.) Clinical experience in the instruction of the mentally retarded in motor skills. <Summer, Fall, Spring>

***523. Biomechanics.** (3) Seidler
Analysis of a selected number of physical education activities by application of principles and methods of advanced physiology of exercise, mechanics, and kinesiology. <Spring, Summer>

***527. Physiological Aspects of Exercise and Sport.** (3) Atterbom, McGill
Theory of and laboratory investigations in the physiological aspects of exercise and sport. <Summer, Fall>

***529. Workshop.** (1-4)
For degree restrictions consult the **Graduate School Bulletin.** <Summer>

***530. Laboratory Investigations in Exercise Metabolism.** (3) Atterbom, McGill
A study of pertinent research with application of selected measurement techniques in the laboratory. Prerequisite: undergraduate course in exercise physiology and permission of instructor. <Summer, Fall>

***540. Sport in American Culture.** (3) Hunt
An examination of the nature and place of sport in American life and an analysis of the interrelationships between sport and institutions, social systems and culture. Prerequisite: Soc 101 or equivalent. <Summer, Spring>

***547. Topics.** (1-3) <Summer, Fall, Spring>

***551-552. Problems.** (1-3 hrs. each semester)

***570. The Analysis of Teaching Physical Education.** (3) Locke
(Also offered as C&I 570.) An examination of models and instruments for the behavioral analysis of teaching and their application to physical education. Prerequisite: permission of instructor. <Summer, Fall>

***588. Psychological Aspects of Sports.** (3) Locke, Papcsy
An examination of the relationship between participation in sport and the psychological status of the individual. Attention to such factors as personality, motivation, and mental health as they relate to sport participation. Prerequisite: Psych 230 or 332 or equivalent. <Summer, Spring>

***595. Facilities Planning, Construction, and Utilization.** (3) Seidler
To acquaint education students with planning and construction concepts and to help prepare them to serve as physical education, athletic, and recreation program consultants to professional planners and planning committees. <Summer, Spring>

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

***610-611. Internship I and II.** (3-6, 3-6)
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

HEALTH EDUCATION

164. First Aid. (2)
First aid and prevention of the common injuries and accidents occurring in and about the school. <Fall, Spring>

171. Personal and Community Health. (3) Douglass
<Summer, Fall, Spring>

301. General Safety Education. (3) Clements, Douglass
Basic principles of safety education. Current safety programs as they apply to school, home, and community. <Spring and alternate summers beginning with Summer 1973>

ø312. **Fundamentals of Human Sex and Sex Education.** (3) Douglass
Basic knowledges, attitudes, and issues regarding the biomedical, psycho-social, historical, semantic, and comparative cultural aspects of human sexuality from conception to senility. Consideration is given to adjustment needs and problems of children and adults in contemporary American society. <Fall, Spring>

345. **Professional Laboratory Experiences in Health Education.** (1-4) Small
<Summer, Fall, Spring>

351. **Problems.** (1-3)

400. **Student Teaching in Elementary Schools.** (3-6-9)
<Fall, Spring>

402. **Traffic Safety Education in Secondary Schools.** (3) Clements
Those enrolling must be licensed drivers. Discussion includes improvements 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, and records for behind-the-wheel training; classroom teaching methods; and physical tests for drivers. <Summer only>

*429. **Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

*447. **Topics.** (1-3)

461. **Student Teaching in the Secondary Schools.** (3-6-9, maximum total allowed 15)
<Summer, Fall, Spring>

462. **Student Teaching in the Secondary Schools.** (3-6-9, maximum total allowed 15)
<Summer, Fall, Spring>

469. **Elementary School Health and Health Education.** (3) Small
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 healthy 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) Small, Douglass
Responsibilities of the teacher in health services, environmental health, and health instruction in secondary schools; basic health principles, planning, methods, and use of community resources. Prerequisite: 171. <Fall>

*490. **Supervision of Health Programs.** (3) Douglass, Small
Supervisory techniques and procedures stressing cooperative planning with local and regional official and voluntary health programs and agencies. Prerequisite: permission of instructor. <Offered upon demand>

*495. **Studies in Community Health.** (3) Douglass, Small
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. Prerequisites: Nurs 352; permission of instructor. <Offered upon demand>

*496. **Investigations in School Health.** (3) Douglass, Small
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>

497. **Readings and Research in Honors.** (3-6)
Prerequisite: see p. 202.

*506. **Analysis of Health Concepts and Practices.** (3) Douglass, Small
Study of what people believe, know, and do about individual, family, and community health. Prerequisite: minimum of an undergraduate minor in Health Education or permission of instructor. <Summer and upon demand>

*511. **Administration of School Health.** (3) Douglass, Small
Study of the administrative aspects of school health programs and related fields. Prerequisite: minimum of undergraduate minor in Health Education or permission of instructor. <Offered upon demand>

ø Limited to juniors and seniors only.

***516. Seminar in Health Education.** (3) Douglass, Small
A review of the research and literature in health and health education; planned as an initial course for graduate students in health education. Prerequisite: minimum of undergraduate minor in Health Education or permission of instructor. <Fall>

***529. Workshop.** (1-4)
For degree restrictions consult the **Graduate School Bulletin.**

***547. Topics.** (1-3)

***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.

***610-611. Internship I and II.** (3-6, 3-6)
Opportunity to apply significant principles from educational theory and research; supervised field experiences in school and community health agencies. <Summer, Fall, Spring>

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

RECREATION

175. Foundations of Recreation. (3) Boaz
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; to study needs for camping with emphasis on school-camp programs; and to study organizational and administrative aspects with emphasis on leadership functions. Prerequisite: permission of instructor. <Spring>

290. Creative and Social Arts for Recreation. (2-3) Piper
Experience in selection of materials, and leadership techniques in group work in social and recreational games, mixers, and dances for use in recreation programs. 4 class meetings per week. <Fall, Spring>

301. Recreational Sports. (2) Boaz
The professional course in recreational sports. Prerequisite: permission of instructor. 4 class meetings per week. <Fall>

302. Recreational Sports. (2) Boaz
Continuation of 301. <Spring>

311. Education for Leisure. (3)
Background in leisure problems of today with emphasis on the individual's role and relationship to those problems. <Spring>

321. Recreational Leadership. (3) Boaz
Methods and materials in recreational leadership: theory, principles, and practice. Prerequisites: 175, 290. <Fall, Spring>

345. Professional Laboratory Experiences in Recreation. (3)
<Fall, Spring>

351. Problems. (1-3) <Summer, Fall, Spring>

378. [478] **Outdoor Recreation.** (3)
The development and organization of outdoor recreation in the United States. Includes economics, land planning, trends, and projections. <Fall>

***429. Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.**
<Offered upon demand>

***447. Topics.** (1-3)
<Offered upon demand>

452. Organization of Sports Program. (3) Clements, Hunt, McGill
(Also offered as PE 452) Organization and administration of games and sports in intramural, interschool, and community recreation programs. Prerequisite: permission of instructor. <Fall>

*454. **Development of Recreation Programs.** (3)
The course is concerned with all phases of the planning and evaluation of the recreation programs: promotion, utilization of resources and facilities and leadership. Prerequisite: 321. <Fall>

475. **Field Work in Recreation.** (3) Boaz
Prerequisite: 345. <Summer, Fall, Spring>

476. **Field Work in Recreation.** (3) Boaz
Prerequisite: 475. <Summer, Fall, Spring>

*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: 175 or permission of instructor.

*479. **Park Management.** (3) Burgan
The principles, practices, and problems involved in public park management, with emphasis upon facility design, maintenance, finance, and administration. Prerequisite: 454 or permission of instructor. <Spring>

480. **Administration of Recreation Programs.** (3) Scholer
The organization, administration, and conduct of recreation programs on the community level. Prerequisite: 454. <Spring>

*485. **Interpretative Services in Outdoor Recreation Programs.** [Outdoor Education] (3)
<Spring>

497. **Reading and Research in Honors.** (3-6)
Prerequisite: see p. 202. <Offered upon demand>

*507. **History and Philosophy of Recreation.** (3) Boaz
The historical development of recreation concepts and philosophies. <Fall>

*508. **Recreation Administration.** (3) Scholer
Organization and administration of public recreation, administrative practices, and techniques. <Spring>

*516. **Seminar in Recreation.** (3)
Current trends and problems in the field of Parks and Recreation. <Spring>

*524. **Evaluation of Recreation Resources and Programs.** (3) Scholer
Determining recreational needs, interests, and opportunities of individuals and communities through surveys, studies, and appraisals; evaluating and appraising community recreation programs and services; and research in the field of recreation. <Fall>

*529. **Workshop.** (1-4)
For degree restrictions consult the **Graduate School Bulletin.** <Offered upon demand>

*540. **Systems Approach for Outdoor Recreation Planning.** [Recreational Use of Public Lands] (3)
Policy, development, and administration of outdoor recreation as encountered in forest, park, and wildland administration. <Spring>

*547. **Topics.** (1-3) <Offered upon demand>

*551-552. **Problems.** (1-3 hrs. each semester)

*555. **Socio-Psychological Concepts of Leisure.** (3) Boaz
Basic sociological and psychological concepts of leisure and their impact upon society. <Spring>

*586. [486] **Principles of Therapeutic Recreation.** [Principles of Therapeutic Recreation and Physical Education] (3)
Philosophy, principles, relationships, and contributions of therapeutic recreation as background for the recreation leader, physical education, hospital administrator, and other personnel. <Fall>

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

*610-611. **Internship I and II.** (3-6, 3-6) Scholer
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

*699. **Dissertation.** (3-9 hrs. per semester) Scholer
See the **Graduate School Bulletin** for total credit requirements.

EDUCATION, HOME ECONOMICS

PROFESSOR E. Snell (Chairman); ASSOCIATE PROFESSOR R. B. Harris; ASSISTANT PROFESSORS I. H. McMurray, T. Olson, M. M. Smith; INSTRUCTOR J. Miller.

MAJOR STUDIES AND CURRICULUM

See pp. 222-223.

MINOR STUDY

A total of 24 hours, at least 9 hours numbered above 300, chosen from the following 4 areas and from the following courses:

1. Family Relations and Child Development, 6 hours: H Ec 102, 247, 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, House Furnishings, and Home Management, 6 hours: H Ec 341, 443, 444.

Any substitutions must be approved by the Chairman of the Department.

HOME ECONOMICS

101. Freshman Seminar. (2) Snell
An introduction to the individual's role as a home economist and her relationship with families. Required of all majors. <Fall>

102. Infant Growth and Development. (3)
An introduction to the 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) Harris
Principles of selection and preparation of food including economic aspects. 1 lecture, 4 hrs. lab. <Fall, Spring>

125. Food for Man. (3) Harris
Physical, social, and psychological approaches to nutrition of individuals and families. <Fall, Spring>

150L. Clothing Construction. (2) McMurray
Selection of patterns and texture for the individual, fitting and altering patterns and garments, application of methods or techniques in construction processes, use and upkeep of equipment. 2 2-hour labs. <Fall, Spring>

222L. Meal Management. (3)
Principles of selection and preparation of food. Meal planning and service. Prerequisite: 120L or equivalent. 1 lecture, hrs. lab. <Spring>

247. Topics. (1-3)‡

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 101, Soc 101, and Art Ed 130. <Spring>

252. Textiles. (3) McMurray
Construction, identification, use and care of clothing and household textiles. <Fall, Spring>

254L. Tailoring. (3) McMurray
Construction of a wool suit or coat emphasizing fitting and techniques of finishing. Consumer information in relation to clothing. 1 lecture, 4 hrs. lab. <Fall, Spring>

325. Nutrition. (3) Harris
The relation of nutrition to the health program; normal nutrition for all ages, prenatal through old age. Prerequisites: 125, Chem 281. <Fall>

326L. Nutrition Laboratory. (1) Harris
Calculating and visualizing amounts and proportions of nutrients in foods, and analysis of recipes to determine nutritive value. Concurrent with 325. 2 hrs. lab. <Fall>

341. The House and Its Furnishings. (3)
Guides in the selection of a house and furnishings with emphasis upon the use of space for function, economy, and beauty. <Fall>

351. Problems. (1-3)

***408L. Child Growth and Development.** (2-3)
Pre-school to adolescence. For laboratory work, observation, and participation in nursery school and in kindergarten. 2 lectures, 2 hrs. lab. <Fall, Spring>

418. Family Relationships. (3) Olson
Family relationships as they affect courtship, marriage, parenthood, old age, and community responsibilities and activities. Prerequisite: junior standing. <Fall, Spring>

427L. Large Quantity Food Production. (3)
Standard methods of food production in quantity; food cost control; standardization of formulas, menu planning and food service. Prerequisites: 120L, 222L, 431L. <Spring 1973 and alternate years>

428. Diet Therapy. (3) Harris
The adaption of diets in the treatment of impaired digestive and metabolic conditions. Prerequisites: Chem 141L, 281. <Spring 1973 and alternate years>

***431L. Experimental Foods** (3)
Experimental methods applied to food preparation, food marketing and food laws. Prerequisites: 222L, Chem 141L, and 281. 2 lectures, 3 hrs. lab. <Spring 1973 and alternate years>

***433. Advanced Nutrition.** (3) Harris
Nutritive value of foods, analyses of adequate diets for normal individuals of all ages, and the relation of nutrition to the health of the world's populations. Prerequisites: 325 or equivalent; Chem 141L and 281, or equivalents; Biol 136. <Offered upon demand>

434. Organization and Management. (3)
A study of the principles of organization and management applied to food service installations. Prerequisite: Psych 102; pre- or corequisite: B&AS 330. <Spring 1973 and alternate years>

443. Home Management. (3) Smith
Decision making in family management. The role of decisions in the allocation and use of resources to meet family goals. The influence of economic, social and cultural demands on the availability and use of resources and the goals sought by families. Prerequisites: Soc or Anthro; junior standing. <Fall>

***444. Family Finance.** (3) Smith
Economic problems of direct concern to the family. Types and adequacy of income and its apportionment in terms of family needs and interests. Factors affecting family finance today. Decisions to be made and alternatives available. Prerequisites: a basic course in Economics, Home Management Principles, Psychology, and Sociology. <Spring>

445L. Home Management Residence. (4) Smith
Half semester laboratory course, including 4 weeks residence in group living and decision making. Provides experiences in dealing with families with varying value structures and for identifying values and goals held by others. Prerequisite: 443. Special fee of $50.00 charged. <Fall, Spring>

***447. Topics.** (1-3)

***456L. Creative Design in Clothing.** (3) McMurray
To develop some creative ability in dress designing through manipulation of a basic pattern. Prerequisites: 150L, 254L; Art Ed 130. 1 lecture, 4 hrs. lab. <Offered upon demand>

***509L. Organization and Management of Nursery Schools and Kindergarten.** (3)
Organization and administration of nursery schools and kindergartens with emphasis on curriculum, housing, equipment, budget, and staff and with parent and student participation. Practicum in teaching a group of preschool children. Prerequisite: 408L or Ed Fdn 300. 1 lecture, 4 hrs. lab. <Offered upon demand>

***510. Young Child At Home and School.** (3)
Research related to the physical, mental, emotional, and social development of the child as affected by his environment at home and school. Prerequisite: a course in child development. <Offered upon demand>

***520. Family Living in Modern Society.** (3) Olson
Pertinent research in the field of family life and family life education. Prerequisite: 418 or Soc 225. <Offered upon demand>

***529. Workshop.** (1-4)
For degree restrictions consult the **Graduate School Bulletin.** <Offered upon demand>

***535. Seminar in Nutrition.** (3) Harris
A critical study of recent research in nutrition. Prerequisite: 325 or 433. <Offered upon demand>

***547. Topics.** (1-3)

***549. Managing Family Resources.** (3) Smith
Research findings and developments in relation to management in the home and their application to homes in today's society. Prerequisites: 443, Econ 330. <Offered upon demand>

***551-552. Problems.** (1-3 hrs. each semester)

***554. Socio-Psychological Aspects of Clothing.** (3) McMurry
Research findings and developments related to the sociological, psychological, economic, and cultural aspects of clothing. Prerequisites: at least undergraduate courses in two of the following areas: Anthropology, Economics, Psychology and Sociology. <Offered upon demand>

***555. Seminar in Textiles.** (3)
Recent research and developments in the field of textiles as related to end products in wearing apparel and household textiles. Prerequisite: 252. <Offered upon demand>

***610-611. Internship I and II.** (3-6, 3-6)
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

HOME ECONOMICS EDUCATION

351. Problems. (1-3)

361. Pre-Student Teaching Experience in Secondary Education. (3) Snell
Two hour seminar, three hours field work weekly. Concurrent with 437. <Spring>

429. Workshop. (1-4)
For degree restrictions see p. 210 of this catalog. <Offered upon demand>

***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. (1-2) Snell
History and trends in home economics, professional organization for home economists; Federal and state laws pertaining to, and research facilities available for, home economics. <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. Prerequisite: major in home economics and teaching experience. <Offered upon demand>

497. Reading and Research in Honors. (3-6)
Prerequisite: see p. 202. <Offered upon demand>

***529. Workshop.** (1-4)

***551-552. Problems.** (1-3 hrs. each semester)

*570. **Seminar in Home Economics Education.** (3) Snell
Survey of literature related to research in home economics education in elementary and secondary schools, in adult programs, and in programs serving out-of-school youth including those programs for wage earning. Means of improving present curriculum and methods in all types of home economics programs. Prerequisite: major in home economics. <Offered upon demand>

EDUCATION, INDUSTRIAL

See Education, Secondary

EDUCATION, MUSIC

See Music Education.

EDUCATION, PHYSICAL

See Education, Health, Physical Education, and Recreation.

EDUCATION, SECONDARY

SECONDARY EDUCATION

PROFESSORS R. J. Doxtator (Chairman), B. M. Crawford, W. H. Ivins, P. Prouse, W. B. Runge; ASSOCIATE PROFESSORS G. Hirshfield, A. W. Howard, R. Kline, G. Stoumbis, P. Tweeten, R. White; ASSISTANT PROFESSORS R. Esparza, E. Koskey, S. Mierzwa.

BUSINESS EDUCATION

PROFESSORS A. Giordano (Program Head), V. Reva; ASSISTANT PROFESSORS J. Heemstra, C. McQUEEN; INSTRUCTOR C. G. Sampley.

INDUSTRIAL EDUCATION

PROFESSOR C. R. Brown; ASSOCIATE PROFESSOR R. D. Nesbitt; ASSISTANT PROFESSORS G. CUNICO[4], A. M. GARRETT.

In these Departments, programs are offered for secondary school teachers of academic subjects, Business Education teachers, Industrial Arts teachers, and general courses in curriculum and instruction for teachers and curriculum specialists.

CURRICULA

Secondary Education, see pp. 225-230.
Business Education, see pp. 213-214.
Industrial Education, see p. 224.

SECONDARY EDUCATION

Explanation of footnotes not indicated will be found on p. 296.

351. **Problems.** (1-3)
<Offered upon demand>

§§361. **Pre-Student Teaching Experience in Secondary Education.** (6)
Three hours seminar, six hours field work weekly. <Summer, Fall, Spring>

*429. **Workshop.** (1-4)
Carries graduate credit when specifically approved by the Graduate Committee. For degree restrictions see p. 210 of this catalog or consult the **Graduate School Bulletin.** <Offered upon demand>

430. **Teaching of Communication Arts.** (3) Hirshfield, Prouse, White
Prerequisite: 361. <Fall>

431. **Teaching of Sciences.** (3) Tweeten
Prerequisite for 461-Science. Prerequisite: 361. <Fall, Spring>

§§ Students in Sec Ed 361 are encouraged to enroll simultaneously in Ed Fdn 300 and/or 310.

432. Teaching of Social Studies. (3) Doxtator, Esparza
Prerequisite: 361. <Fall, Spring>

433. Teaching of Industrial Subjects. (3) Brown, Garrett, Nesbitt
(See I Ed 433)

434. Teaching Art in Secondary School. (3)
(See Art Ed 434)

§**435L. Teaching of Biology.** (3) Degenhardt
Prerequisites: 361, Biol 122L. 2 lectures, 3 hrs. lab. <Fall>

436. Teaching of English. (3) Logan, Prouse
Prerequisites: 361, Engl 102. Carries credit both in Education and in English. <Fall, Spring>

***437. Teaching of Home Economics.** (3) Snell
(See HEc Ed 437)

§**438. Teaching of Mathematics.** (3) Mitchell
Prerequisite: 361. <Fall>

439. Teaching of Business Subjects. (3) Giordano
(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) Lamadrid
(Also offered as Span 441) Prerequisite: Sec Ed 361. <Offered upon demand>

***442. Teaching of Reading.** (3) White
Prerequisite: 361. <Summer, Fall>

***443. Coordination Techniques in Vocational Cooperative Programs.** [Work Experience in Secondary Schools] (3) Garrett, Runge
(Also offered as Bus Ed 443 and 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) Prerequisite: Sec Ed 361. <Offered upon demand>

***447. Topics.** (1-3)

461. Student Teaching. (3-6-9, maximum total allowed 15)
Observation and teaching in New Mexico schools. May be completed in one or two semesters. Assignments during a second semester will place more emphasis on teaching in an additional subject, or grade level, and will provide fewer hours in observation and participation. Weekly seminar meetings with University staff members are required. Prerequisites: 361; 2.3 grade point average in teaching major (2.5 for students under jurisdiction of Sec Ed Dept); minimum of 12 hours in professional education. See also additional requirements on pp. 205-208. <Summer, Fall, Spring>

462. Student Teaching. (3-6-9, maximum total allowed 15)
A second student teaching experience.

463. Professional Education Block. (6-15)
Ordinarily the professional secondary education sequence of courses includes foundations, methods, and student teaching taken during different semesters. This block combines one or more of these courses with student teaching. Larger amounts of time will be required as compared to conventional courses. Application should be made at least one semester in advance. See instructor for special scheduling. Prerequisites include College of Education core courses or permission of the instructor.

497. Reading and Research in Honors. (3-6)
Prerequisite: see p. 202. <Offered upon demand>

***500. Advanced Instructional Strategies.** (3) Doxtator, Ivins, Runge
(Also offered as C&I 500) Examination and study of recent developments in field of instructional theory and its application to the classroom. <Fall, Spring>

§ Credit for undergraduate teaching majors and graduates in Education only.

***501. High School Curriculum.** (3) Doxtator, Hirshfield, Howard, Ivins
Setting, development, and present form of the secondary school curriculum. Includes specific attention to problems of development of classroom instruction, guidance and activity programs, and related parts or auxiliaries of the total secondary school program. <Summer, Fall>

***502. The Junior High School.** (3) Crawford, Howard, Ivins
Backgrounds of the junior high school and middle school and their purposes related to pupils' characteristics. The fundamental learning program, guidance and exploration, the pupil population, the teacher's role, leadership and organization in the curriculum. <Summer, Spring>

***503. Student Activities in the Secondary School.** (3) Ivins, Prouse
The activity concept in learning; relationship of activities to needs and characteristics of adolescents; and purposes of the activities program. The basic principles and problems in the organization and administration of activities programs, as well as sponsorship and the teacher's role in activities. <Summer>

***504. The Two Year College Curriculum.** (3)
The background of the two year college movement, perspectives on its current status, and projections for the future of the two year college. The philosophical, curricular, instructional, administrative, and organizational characteristics of the program will be considered with emphasis on their relationships to foundational structures in education. <Spring>

***508. Seminar in Supervision of Student Teaching.** (1-3) Giordano, Howard, Nesbitt, Runge
<Offered upon demand>

***510. Developments in Industrial and Vocational Education.** (3) Runge
(Also offered as Bus Ed 510 and I Ed 510.) <Summer only>

***520. Instructional Trends in the Communication Arts.** (3) Hirshfield, Prouse, White
Analysis of the associative use of the language arts and communication competency, with emphasis upon recent research and instructional trends in the field. <Summer, Fall>

***521. Seminar in English Curriculum and Instruction.** (2-5) Prouse
Application of other MAT in English course learning to practical problems of curriculum and instruction in secondary school English classes. <Summer only>

***527. Studies in Rhetoric for Teachers.** (3) Pickett, Prouse, Warner, White
(Also offered as Engl 527.) An examination of a variety of approaches to the teaching of writing. <Spring>

***528. Studies in Reading and Literature for Teachers.** (3) Pickett, Prouse, Warner, White
(Also offered as Engl 528.) Applications of knowledge of the reading process to the teaching of literature. <Summer only>

***529. Workshop.** (1-4)
For degree restrictions consult the **Graduate School Bulletin.** <Offered upon demand>

***530. Seminar in Science Teaching.** (3)† Tweeten
Seminar in topics for advanced science students. <Summer only>

***540. Instructional Trends in the Social Studies.** (3) Doxtator, Stoumbis
An analysis of social studies curricula, state and nationwide. Emphasis upon proposals for change and current experiments. Students are expected to develop a proposal for experimentation in their own local situations. <Summer, Fall>

ø546. Economic Education. (2 or 4) Doxtator, Parker
(Also offered as Econ 546 and Bus Ed 546.) A survey of those areas of economics most relevant to contemporary secondary school curriculum: comparative economic systems, the role of government in a free enterprise system, the poverty problem, international economic problems, etc. Guidance in the development of a plan for introducing economics into the classroom. Examination, development, and evaluation of instructional materials. <Summer only>

ø549. History Education. (3)
(Also offered as Hist 549.) Historiographical viewpoints, developments in the teaching of history, improvement in the teaching of history. <Summer only>

ø550. Seminar in History Education. (3)
(Also offered as Hist 550.) Research related to issues and problems in the methods, materials and curricular emphasis in history education. <Summer only>

ø Available for graduate credit except for *graduate majors* in Economics or History.

***551-552. Problems. (1-3 each semester)‡**

***556. Proseminar in Problems of Language Instruction. (3)**
(See Span 556.)

***590. Seminar.** (3) Crawford, Doxtator, Ivins
Current issues, problems, and trends affecting education. <Fall>

***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) Crawford, Howard, Ivins
(Also offered as C&I 601.) A practicum in analysis and judgment making of the effectiveness of school practices in accord with recommendations of professional organizations, local school-community factors, and with consideration for newer concepts and approaches such as team teaching, programmed instruction, flexible scheduling, independent study and use of resource centers. <Fall>

***610-611. Internship I and II. (3-6, 3-6)**
Available to selected advanced graduate students; offers an opportunity to apply, under careful supervision, significant principles from educational theory and research in classroom or parallel research situations. <Summer, Fall, Spring>

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

BUSINESS EDUCATION

¶111. Beginning Typewriting. (2) Reva
The learning of the keyboard by the touch system. **Students who have had typewriting in high school or business school will not receive credit in 111.** <Offered upon demand>

¶112. Intermediate Typing. (3) Heemstra, Sampley
Business forms, correspondence and letter styles, manuscripts, tabulation, speed building with individual goals. Prerequisite: knowledge of typewriter operation and keyboard. **Students who have had two years of typing in high school or business school will not receive credit in 112.** <Fall, Spring>

§113. Shorthand Theory. (3) Heemstra, Sampley
Gregg theory and essentials of writing; speed goal: 50 wpm minimum. **Students who have studied shorthand in business college or high school will not receive credit.** <Fall, Spring>

§114. Shorthand Dictation. (3) Heemstra, Sampley
Review of theory; development of transcription; speed goal; 80 wpm minimum. Prerequisites: 111, 113, or equivalent. **Students who have had two years of shorthand in high school or business school will not receive credit in 114.** <Fall, Spring>

117. Office Machines and Filing. (2) Heemstra
Laboratory work in filing, transcription from recorded dictation, mimeograph, direct process duplicators, listing and non-listing calculators. Prerequisite: 112. <Fall, Spring>

201. Introduction to Data Processing for Business Education. (3) McQueen
An introduction to terminology, basic uses of the major machines, business applications, social implications, curriculum and teaching problems. <Fall, Spring>

§253. Shorthand Transcription. (3) Heemstra, Sampley
Review of theory; dictation and transcription from shorthand notes correctly and speedily. Mailable letters are required. Prerequisites: 112, 114, or equivalent. Speed goal: 120 wpm <Fall, Spring>

257. Secretarial Administration (3) Reva
Development of the ability to apply secretarial skills to office duties and to handle efficiently the responsibilities of a secretarial position. Prerequisites: 112, 114, or equivalent. <Fall, Spring>

262. Advanced Typewriting. (3) Heemstra, Sampley
Production, with efficiency and accuracy, of business letters, reports, manuscripts, tabulation, rough drafts, corporation reports, legal documents, study of skill performance problems from point of view of teacher and/or office supervisor. Individual speed goals. Prerequisite: 112. <Fall, Spring>

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§ A maximum of 6 hours credit allowed in shorthand in the College of Arts and Sciences. No credit allowed toward degree in the College of Pharmacy.

¶ No credit allowed toward degrees in Colleges of Arts and Sciences, and Pharmacy.

265. Business Communications. (3) Reva
Prepares the student to understand terms, policies, and procedures in business relations; letter writing, reports, memoranda, and other media of communication. <Fall, Spring>

350. Vocational Office Laboratory. (2-3) Sampley
Work experience for college credit under supervision in approved work stations. Prerequisites include business education skills courses and permission of instructor.

351. Undergraduate Problems. (1-3) Giordano

429. Workshop in Business Education. (1-4) Giordano <Offered upon demand>

439. Teaching of Business Subjects. (3) Giordano
Prerequisite: Sec Ed 361. <Fall, Spring>

***443. Coordination Techniques in Vocational Cooperative Programs.** [Work Experience in Secondary Schools] (3) Garrett, Runge
(Also offered as Sec 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>

***447. Topics.** (1-3)

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15) Giordano, McQueen
Corequisite: 439. <Summer, Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15) Giordano, McQueen
<Summer, Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15) Giordano McQueen
<Fall, Spring>

***501. Foundations of Vocational Business Education.** [Foundations of Business Education] (3) Giordano
The various phases and functions of vocational Business Education brought into proper perspective as one broad area. <Offered upon demand>

***503. Readings in Vocational Business Education.** [Readings in Business Education] (3) Giordano
Analysis of research and literature and implications of findings for vocational Business Education. <Offered upon demand>

***510. Development in Industrial and Vocational Education.** (3) Garrett, Nesbitt, Runge
(Also offered as Sec Ed 510 and I Ed 510.) <Summer only>

***511.** [510] **Instructional Trends and Research in Typewriting Education.** [Seminar in Typewriting Education] (3) Giordano
The principles, methods, procedures, and problems in the teaching of typewriting at all levels for all objectives. <Offered upon demand>

***512.** [511] **Instructional Trends and Research in Shorthand Education.** [Seminar in Shorthand Education] (3) Giordano
The principles, methods, procedures, and problems in the teaching of shorthand and transcription. <Offered upon demand>

***513.** [512] **Instructional Trends and Research in Bookkeeping and Accounting Education.** [Seminar in Bookkeeping and Accounting Education] (3) Giordano
The principles, methods, procedures, and problems in the teaching of bookkeeping and accounting. <Offered upon demand>

***514.** [513] **Instructional Trends and Research in Socio-Business Education.** [Seminar in Socio-Business Education] (3) Giordano
The principles, methods, procedures, and problems in the teaching of the various classes included in the area of socio-business education such as: General Business, Consumer Economics, Applied Economics, Business Principles, Business Organization, Introduction to Business, Business Law, Business Communications, Business Arithmetic, and Economic Geography. <Offered upon demand>

***515.** [514] **Methods and Materials in Vocational Office and Distributive Education.** [Seminar in Office and Distributive Education] (3) Giordano, Runge
The principles, methods, procedures, and problems in the teaching and coordinating of vocational office and distributive education classes and programs with emphasis upon

advanced skills combined with actual and simulated work experiences on or off campus. <Offered upon demand>

***529. Workshop in Business Education. (1-4)** Giordano
For degree restrictions see department chairman. <Offered upon demand>

ø546. Economic Education. (2 or 4) Doxtator, Parker
(Also offered as Econ 546 and Sec Ed 546.) A survey of those areas of economics most relevant to contemporary secondary school curriculum: comparative economic systems, the role of government in a free enterprise system, the poverty problem, international economic problems, etc. Guidance in the development of a plan for introducing economics into the classroom. Examination, development, and evaluation of instructional materials. <Summer only>

***551-552. Problems. (1-3 hrs. each semester)** Giordano

INDUSTRIAL EDUCATION

Explanation of footnotes not indicated will be found on p. 296.

I. TECHNICAL <Courses in this section will also be offered upon demand in summer session>

101. Shop Computation. (3) Brown, Cunico
Practical application of algebra, geometry, and trigonometry in the solution of applied problems found in the industrial arts. <Fall>

110L. Machine Woodworking. (3) Brown
Introduction to the woodworking area. Emphasis on the proper use of hand tools, power machinery, and basic finishing methods. Use of wood turning tools and equipment in spindle, faceplate and special turning processes. 2 lectures, 3 hrs. lab. <Fall, Spring>

111L. Drafting I. (3) Garrett
Essentials of drafting, including the use of instruments, lettering, orthographic projections, dimensioning, auxiliary views, pictorials, sections, graphic symbols. 1 lecture, 3 hrs. lab. <Fall>

112L. Drafting II. (3) Garrett
A continuation of 111L, with emphasis on advanced dimensioning, detail and assembly drawings, exploded views, etc. Prerequisite: 111L. 2 lectures, 3 hrs. lab. <Spring>

120L. Machine Metalworking. (3)
Introduction to the metalworking technology with emphasis upon the proper use of tools and machines and their operations. 2 lectures, 3 hrs. lab. <Fall, Spring>

225. Design in Industrial Arts. (3) Garrett
Theory and utilization of design principles in the development and use of the various materials of industry. 2 lectures, 3 hrs. lab. Prerequisite: 110L, 111L. <Fall>

230L. Power Mechanics. (3) Nesbitt
A basic course pertaining to the internal combustion engines. Experiences in the maintenance and repair, with reference to the consumer level, on the automobile and various other small engines. 2 lectures, 3 hrs. lab. <Fall, Spring>

245. Slide Rule. (2) Brown
The use of the various scales for solving technical problems. <Offered upon demand>

261L. Drafting III. (3) Garrett
Problems involving the point, line, and plane; and practical problems involving the above principles with emphasis on triangulation, developments, intersections, perspective. Prerequisite: 111L. 2 lectures, 3 hrs. lab. <Fall>

262L. Drafting IV. (3) Garrett
The principles of style and design of residential dwellings are studied with emphasis upon architectural drawings and construction details. Prerequisite: 111L. 2 lectures, 3 hrs. lab. <Spring>

265L. Finishing and Maintenance. (3) Brown
Techniques, processes and application of finishes on the various kinds of wood. Practice in tool and machine maintenance and repair, tool fitting and sharpening, and saw filing. 2 lectures, 3 hrs. lab. <Fall, Spring>

280L. Electricity and Electronics I. (3) Cunico
An introductory course in electrical theory and its application in the field of lighting, heating, communication, and electronics. Individual and group experiences are derived through experimentation and the construction of electrical projects. 2 lectures, 3 hrs. lab. Prerequisite: permission of instructor. <Fall, Spring>

ø Available for graduate credit except for graduate majors in Economics or History.

285L. Welding. (3) Nesbitt
Arc and oxyacetylene welding with some tungsten inert gas welding. Techniques, methods, and processes are considered with emphasis on the welding and cutting of the common metals. 2 lectures, 3 hrs. lab. Prerequisite: permission of instructor. <Fall, Spring>

315L. Pattern Making and Foundry. (3)
The construction of various patterns and core boxes used in pattern making. Principles and practices involved in the foundry industry. Experiences in the operation, care and maintenance of pattern making and foundry tools and equipment. 2 lectures, 3 hrs. lab. Prerequisites: 110L, 111L, 120L. <Fall>

335L. Intermediate Power Mechanics. (3) Nesbitt
Hydraulic and mechanical methods of transmitting power. Theory and function of gear and hydraulic transmission. 2 lectures, 3 hrs. lab. Prerequisite: 230L or equivalent. <Fall>

350L. Cabinet Making. (3) Brown, Cunico
Advanced instruction in the use of power woodworking machinery. Emphasis on cabinet and furniture designing and construction. 2 lectures, 3 hrs. lab. Prerequisite: 110L or equivalent. <Spring>

365L. Advanced Machine Metalworking. (3)
Advanced course in the machine tool area. Includes experiences in the various processes and practices of metal machining. Emphasis on work with the metal working lathe, shaper, surface grinder, and the horizontal and vertical milling machines. Maintenance and repair of tools and machinery. 2 lectures, 3 hrs. lab. Prerequisite: 120L or equivalent. <Spring>

380L. 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. An introduction to transistor principles and their application. Prerequisite: 280L or permission of instructor. 2 lectures, 3 hrs. lab. <Fall>

386L. Metal Fabrication. (3) Nesbitt
An introduction to the various aspects and basic processes in the hot and cold forming of metals. Techniques will be utilized in the use of the tools and equipment for metal fabrication, which includes such areas as sheet metal, metal spinning, forging and ornamental metal. 2 lectures, 3 hrs. lab. Prerequisite: 285L. <Spring>

470L. Carpentry. (3) Brown
Plot layouts, foundations, floor and wall framing, roof construction, rafter cutting, inside and outside finishing, and the use of the steel square. A scaled model house is constructed. Prerequisite: 110L or equivalent. 2 lectures, 3 hrs. lab. <Spring>

475L. Metal Technology. (1-3)
Advanced hand tool and machine processes in the areas of forging, bench metal, sheet metal, welding, foundry, art metal, and other areas of metal working used in the school shop situation. Students will choose the area or areas in which they desire to concentrate additional experiences. Lab hours arranged. Prerequisites: 120L, 365L. <Fall, Spring>

480L. Wood Technology. (1-3) Brown
Advanced course designed to meet the individual needs of students wishing to concentrate in a specialized area of woodworking. Lab hours arranged. Prerequisite: 110L, 350L. <Fall, Spring>

II. PROFESSIONAL

105. Introduction to Industrial Education. (2) Brown, Nesbitt
Orientation of the student to industrial, vocational, and technical education. <Fall>

351. Problems. (1-3) <Fall, Spring>

429. Workshop in Industrial Education. (1-4)
For degree restrictions, see p. 210 of this catalog. <Offered upon demand>

433. Teaching of Industrial Subjects. (3) Garrett, Nesbitt
Methods of developing instructional units, teaching methods associated with industrial curricula, and the selection and evaluation of teaching materials used in the classroom. <Spring>

461. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisite: 433. <Summer, Fall, Spring>

462. Student Teaching in the Secondary Schools. (3-6-9, maximum total allowed 15)
Prerequisite: 433. <Summer, Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)
Prerequisite: 433. <Summer, Fall, Spring>

466. Theory and Organization of Industrial Education. (3) Garrett, Nesbitt
An analysis of organizing and teaching of industrial subjects as found in the modern school. <Fall>

III. GRADUATE STUDY <Will be offered upon demand any session>

***443. Coordination Techniques in Vocational Cooperative Programs.** [Work Experience in Secondary Schools] (3) Garrett, Runge
(Also offered as Sec Ed 443 and Bus Ed 443.) Development of present practices in work experience programs for seondary schools 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>

***447. Topics.** (1-3)

***490. Measurement and Evaluation Techniques.** (3) Brown, Nesbitt
Methods of measuring achievement in industrial subjects. Emphasis is given to evaluation of manipulative activities and technical knowledge.

***492. Instructional Analysis.** (3) Brown, Nesbitt
Techniques and methods used to identify content for instruction in the practical and industrial subjects. Analysis of occupations or activities in determining content for instructional purposes.

***505. Development, Selection, Use, and Organization of Instructional Materials.** (3) Garrett, Nesbitt
Research in the study of sources, values, limitations, and classification of instructional materials. Emphasizes objectives, theories, and practices underlying the formation, evaluation, and revision of learning materials.

***510. Developments in Industrial and Vocational Education.** (3) Garrett, Nesbitt, Runge
(Also offered as Bus Ed 510 and Sec Ed 510.) Includes history, developments, movements motivating the present programs in vocational, distributive, office and secretarial, trade and technical, industrial, home economics, and health education. A thorough study will be made of federal legislation with implications for new programs, the New Mexico State Plan for Vocational Education, secondary and post-high school program development, apprenticeship training, and technical level courses.

***511. Laboratory Planning and Design.** (3) Nesbitt
An appraisal and analysis of current laboratory requirements. Research in the problems associated with the development of modern industrial education laboratory facilities. Revision of present facilities to meet current demands. Special attention given to lighting, heating, cooling, ventilation, color, building materials used in construction, location in relation to other educational areas and the selection and placement of equipment for efficient operation and work flow.

***515. Industrial Accident Prevention.** (3) Nesbitt
The principles of accident prevention, philosophies involved, psychology of safety, personal protective devices, machine guarding, occupational diseases and other areas pertinent to industrial safety, industrial and vocational instructors and personnel in industry.

***520. Administration of Industrial and Vocational Programs.** (3) Garrett, Nesbitt
Problems and procedures in organizing and administering the various types of programs in the practical arts areas. A study of the laws on the federal, state and local levels relating to these arts.

***525. Advanced Technical Knowledge and Skills.** (3)‡
Individual or group study in research and experimentation with advanced industrial subject information, skills, knowledges, attitudes and concepts. Areas of work can be in the woods, metals, drafting, electrical power mechanics, industrial plastics and ceramics, or other related areas.

***529. Workshop.** (1-4)
For degree restrictions consult the **Graduate School Bulletin.**

***551-552. Problems.** (1-3 hrs. each semester)

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

See Engineering, Electrical

ELEMENTARY EDUCATION

See Education, Elementary

ENGINEERING

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)**
Study of the 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 factors. <Fall, Spring>

****337.** [CE 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)**
A course for non-engineers that 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 considerations. <Spring>

****350. Transportation and Society. (3)**
A course for non-engineers that 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.** [ME 261] **Computers and Society.** [Society and Computers] **(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. <Fall>

****362.** [EE&CS 340] **Information and Communication.** [Cybernetics: Communication, Feedback, and Control] **(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. The principles of allocation of channels for public and private communication will be discussed. The interchangeability of communication and transportation facilities, e.g., telephone vs. travel, catalog vs. showroom, and the electronic post office and library will be considered. <Spring>

****380.** [Nucl E 230] **Applications to Nuclear Energy. (3)**
A course designed to acquaint the non-technical student in the humanities with nuclear energy and its peaceful applications in many areas affecting human affairs. Course content 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)**
A course for non-engineers on the subject of energy resources, energy conversion, and the effect on the environment. The course content 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>

COOPERATIVE EDUCATION PROGRAM

Students enrolled in the Cooperative Education Program (see p. 233) are required to register in Engr 100 while on work phase and in one of the appropriate evaluation courses during the semester immediately following each work phase.

100. Cooperative Education Work Phase. (0) $15.00 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 G. A. Whan (Acting Chairman), T. T. Castonguay; ASSOCIATE PROFESSOR K. E. Cox; ASSISTANT PROFESSORS R. E. Dascher, G. H. Quentin.

CURRICULUM

See p. 236.

251. Chemical Calculations. (3)
More extensive problem work in the stoichiometric principles of chemistry, including composition changes; the material balance; units and dimensions. Prerequisite: Chem 102L or equivalent. <Fall>

252. Industrial Stoichiometry. (3)
The application of the fundamental laws of chemistry, physics, and mathematics to industrial chemical calculations. Prerequisites: 251, Physcs 161, Math 264. <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 studied. 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 101L, or equivalents, and junior standing. <Fall>

353. Advanced Chemical Engineering Calculations. (3)
Prerequisite: Math 265. <Fall>

****354L. Process Dynamics.** (3)
Application of special mathematical techniques to chemical processes; topics in process control and instrumentation. Prerequisite: 353 or equivalent, 2 lectures, 3 hrs. lab. <Spring>

360. Natural Gas Production and Transmission. (3)
Prerequisite: 411 or ME 301. <Offered upon demand>

398F. Field Trip. (0)
Required for graduation. Annual inspection tour to leading chemical plants in different sections of the country. Approximately one week is spent on these visits. <Spring>

****401. Principles of Thermodynamics I.** (3)
The laws of thermodynamics; irreversible processes; development of the energy properties; applications to chemical and physical systems. Prerequisites: Math 265, Physcs 262. <Fall>

****402. Principles of Thermodynamics II.** (3)
Continuation of 401 with applications to chemical engineering processes; physical and chemical equilibria. <Spring>

****411. Unit Operations I.** (3)
Transport phenomena. The mechanisms and the related mathematical analysis of heat, mass, and momentum transfer. Macroscopic balances. Prerequisites: 252, Math 265, Physcs 262. <Fall>

****412. Unit Operations II. (3)**
A continued lecture and recitation of the Unit Operations and their applications to the chemical industries: problems in heat transfer, evaporation, humidification, drying, crystallization, phase separation, and related topics. Prerequisite: 411. <Spring>

****413. Unit Operations III. (3)**
A continuation of Unit Operations; problems in mass transfer, phase relationships, extraction, distillation, and related topics. Prerequisite: 412. <Fall>

****414L. Unit Operations Laboratory I. (2)**
Laboratory practice and experimental study of Unit Operations covered in 411 and 412. Corequisite: 412. 6 hrs. lab. <Spring>

****415L. Unit Operations Laboratory II. (2)**
Experimental laboratory study of the Unit Operations covered by 412 and 413. Prerequisite: 414L; corequisite: 413. 6 hrs. lab. <Summer only>

***417. 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. <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>

***454. Process Modeling and Optimization. (3)**
Quantitative description of chemical engineering systems. Optimum process design parameters and operating conditions. Prerequisite: 353 or equivalent. <Spring>

****461. Chemical Engineering Materials I. (3)**
Introduction to the physical basis of the structure sensitive and insensitive properties of solids. The relations between the structure and properties of metals, alloys, polymers, and ceramics. Phase equilibria and transformations, strengthening mechanisms, solid state kinetics, and diffusion. Mechanical behavior of solids. <Fall>

****462. Chemical Engineering Materials II. (3)**
Electronic and magnetic properties of solids. Modern theory of corrosion. Application of corrosion theory and corrosion prevention. Oxidation and high temperature metal-gas reactions. Selection of materials for the chemical industry. Prerequisite: 461 or equivalent. <Spring>

****471. Applied Chemical Kinetics. (3)**
The kinetics of homogeneous and heterogeneous catalytic and non-catalytic reactions for flow and non-flow processes. Elementary principles of chemical reactor design and operation. Prerequisites: 353 or equivalent, 402. <Fall>

472. 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. Prerequisites: 413, Econ 200 or equivalent. <Spring>

481L. Chemical Engineering Process Laboratory I. (2)
Research and development laboratory studies on chemical processes and products. Emphasis on creativity in pursuing research objectives. Literature survey, laboratory notebook and report writing stressed. Prerequisite: Chem 311. 6 hrs. lab. <Fall>

482L. Chemical Engineering Process Laboratory II. (2)
Continuation of 481L, but may be taken as an independent unit. Prerequisite: Chem 311. 6 hrs. lab. <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>

****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: 401, 413. 2 lectures, 3 hrs. lab. <Spring>

***501-502. Chemical Engineering Seminar. (1-3; 1-3)‡‡**
Individual study on advanced phases of chemical engineering and industrial chemistry. Research reports, and conferences. <501 Fall, 502 Spring>

***521. Advanced Transport Phenomena I. (3)**
Molecular transport. The equations of change applied to momentum, energy and mass transfer. Analogies between these phenomena and their limitations. Transport dependent on two independent variables, unsteady state problems. Diffusivity and the mechanisms of mass transport. Boundary layers. Prerequisite: 411 or equivalent. <Fall>

***522. Advanced Transport Phenomena II. (3)**
Turbulent transport phenomena. Homogeneous turbulent flows. Transport phenomena molecular and turbulent. Turbulent shear flows—channels and pipes. Convective dispersion. Solutions of the diffusion equation. Extension of mathematical models of turbulent flows to the real world. Prerequisite: 521 or equivalent. <Spring>

***523. Equilibria and Staged Operations. (3)**
An advanced study of the mass transfer operations of chemical engineering. Equilibria of non-ideal systems. Multicomponent operations. <Fall>

***531. 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>

***532. Advanced Process Dynamics and Control. (3)**
Dynamics of complex processing systems such as packed-bed reactors and mass transfer equipment. Sampled-data control systems involving on-line gas chromatographs and process control computers. <Spring>

***541. Catalysis. (3)**
Rate equations and theories of heterogeneous and homogeneous catalysis. Adsorption phenomena. Physical characterization of catalysts. Catalyst preparation, poisoning and deactivation. Experimental methods and applications to industrial processes. <Offered upon demand>

***542. Advanced Chemical Engineering Thermodynamics. (3)**
Advanced thermodynamics with reference to its application in chemical engineering. <Spring>

***543. Irreversible and Statistical Thermodynamics. (3)**
Application of modern thermodynamic concepts and techniques to chemical engineering. <Offered upon demand>

***551-552. Problems. (1-3 hrs. each semester)‡‡**
Advanced readings, design, or research.

***561. Kinetics of Chemical Processes. (3)**
Rate equations for simple and complex chemical processes, both homogeneous and heterogeneous. Experimental methods and interpretation of kinetic data for use in chemical reactor design and analysis. Application to complex industrial problems. <Fall>

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ENGINEERING SCIENCE OF MATERIALS

The following courses form the offerings in the graduate program in Engineering Science of Materials.

***591. Theoretical Physical Metallurgy. (3)**
Electronic structures and the bonding of solids, crystal structures and crystal imperfections. The physical and mechanical behavior of metals. Prerequisite: 461 or equivalent. <Offered upon demand>

***592. Physical Metallurgy of Alloys. (3)**
Equilibrium and nonequilibrium phase relations in binary and ternary alloys. Interrelations of microstructures and physical and mechanical properties. Control of structures and properties by alloying and by thermal and mechanical treatment. Prerequisites: 461, 591 or equivalent. <Offered upon demand>

***593. Ceramics. (3)**
Mechanical, thermal, chemical and electrical properties of ceramic materials. Fabrication techniques, materials selection and applications of ceramic products. Prerequisite: 461; recommended: 591, Chem 311-312, Geol 304L. <Offered upon demand>

***594. 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. Prerequisites: 461 or equivalent; reommended: Chem 301. <Spring>

***595. Seminar in Materials.** (1-3)‡ <Offered upon demand>

***596L. Physical Metallurgy Laboratory.** (1)
The techniques and applications of metallography; preparation of metallographic sections; microscopy and photomicrography; X-ray diffraction techniques; physical, chemical, and mechanical evaluation of metal specimens. Pre- or corequisite: 592. 3 hrs. lab. <Offered upon demand>

***597. Crystalline Defects in Solids.** (3)
Theory of crystalline defects and application to material properties. Defect species such as vacancies, interstitials, impurities, dislocations, stacking faults and grain boundaries. Physical properties: mechanical, kinetic, electrical, and magnetic. Irradiation damages in solids. Direct observation of defects. Prerequisite: 461. <Offered upon demand>

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ENGINEERING, CIVIL

PROFESSORS C. L. Hulsbos (Chairman), R. H. Clough, W. R. Gafford, R. G. Huzarski, J. E. Martinez, M. C. May, G. E. Trianadafilidis; ASSOCIATE PROFESSORS R. L. Bleyl, J. B. Carney, Jr., M. M. Cottrell, R. J. Johnson, Jr., C. Omid'varan; ASSISTANT PROFESSORS W. T. Abbott, J. R. Matthews, G. W. May.

CURRICULUM
See p. 240.

102L. Engineering Computational Methods. (3)
Graphical methods applied to empirical equations, graphical calculus, and nomography; vector analysis; digital computer programming (FORTRAN IV). Corequisite: Math 162 or equivalent. 2 lectures, 4 hrs. lab. <Fall, Spring>

104L. 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>

202L. 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. Prerequisite: Physcs 160; corequisite: Math 264. 2 lectures, 3 hrs. lab. <Summer, Fall, Spring>

§211L. Introduction to Architectural Structural Analysis. (3)
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: Math 151 or 162 or 181. 2 lectures, 3 hrs. lab. <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>

§ No credit allowed in College of Engineering.

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. <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. Prerequisite: 202L. <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>

****306. Structural Analysis II.** (3)
Analysis of statically indeterminate structures; use of moment-area, conjugate structure, energy, slope-deflection, and moment distribution methods; sidesway; influence lines; non prismatic and curved members. Prerequisite: 305 or permission of instructor. <Spring>

§312. Architectural Structures. (3)
Approximate and simplified methods of design of building frame members in wood, metals, and reinforced concrete, including foundations, in accordance with current codes. Prerequisite: 211L. <Fall>

§316. Undergraduate Research in Architectural Structures. (3)
Individual research problems in structural analysis and design as applied to architectural structures. Prerequisite: 312 or permission of instructor. <Spring>

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. Prerequisite: 305. 2 lectures, 3 hrs. lab. <Spring>

****331L. Fluid Mechanics.** (3) Carney, Martinez
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: 202L; corequisite: ME 206L. 2 lectures, 3 hrs. lab. <Fall>

****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. <Spring>

****336L. Sanitary Engineering I.** (3) Martinez, 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. Corequisite: 332. 2 lectures, 3 hrs. lab. <Spring>

360L. Soil Mechanics. (3)
Physical, chemical, and mechanical properties of soil as an engineering material; relation of properties to engineering problems. Prerequisite: 302. 2 lectures, 3 hrs. lab. <Spring>

370. Engineering Materials Science. (3)
(Also offered as ME 370.) The structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics and polymers. Prerequisite: 302; Corequisite: ME 301. <Fall, Spring>

380L. Cartography. (3)
Map projection and use of maps to show areal distribution and graphic representation of statistical data. Prerequisite: permission of instructor. 2 lectures, 3 hrs. lab. <Spring>

382. Transportation Engineering. (2)
The planning, economics, finance, location, geometric design, and administration of transportation systems. Prerequisite: junior standing in Civil Engineering. <Fall>

§ No credit allowed in College of Engineering.

*401. **Advanced Mechanics of Materials.** (3) Johnson, G. May, Omid'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 non-circular cross-sections, energy principles. Prerequisites: 302, senior standing.

*402. **Tensor Analysis and Continuum Mechanics.** (3)
(Also offered as ME 402.) Tensor analysis in Euclidean space, kinematics of continua, the stress tensor, linear constitutive equations for elastic solids, compressible viscous fluids, and viscoelastic media. Prerequisites: 302, Math 311. <Fall>

*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)
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>

*415. **Intermediate Structural Analysis.** (3) Johnson, G. May, Omid'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>

*416L. **Design of Structural Systems.** (3)
Topics to be selected from the following systems: buildings, bridges, aerospace structures, plates, cylindrical shell panels, space frames. Structural model analysis. Prerequisite: permission of instructor. 2 lectures, 3 hrs. lab. <Offered upon demand>

417L. **Structures Workshop I. (2) Gafford
Advanced topics in structures for Architectural majors. Prerequisite: permission of instructor. 6 hrs. lab. <Fall>

418L. **Structures Workshop II. (2) Gafford
Advanced topics in structures for Architectural majors. Prerequisite: permission of instructor. 6 hrs. lab. <Spring>

*420. **Plastic Theory of Structures.** (3) Johnson, G. May, Omid'varan
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 311. <Spring>

*430. **Applied Hydrodynamics.** (3) Carney
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. <Fall 1973 and alternate years>

*431. **Intermediate Hydrology.** (3) Carney, Martinez
Hydrometeorology, soil moisture, runoff cycle, losses, overland flow, flood routing, runoff routing, ground water flow. Prerequisites: 332 and permission of instructor. <Fall 1973 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 1972 and alternate years>

*436L. **Sanitary Engineering II.** (2) Martinez, Matthews
Design of wastewater treatment plants using traditional design parameters and experimental design parameters. Population forecasting, plant hydraulics, stream sanitation, optimization analysis. Prerequisite: 336L. 1 lecture, 3 hrs. lab. <Fall>

*437. **Sanitary Engineering III.** (2) Martinez, Matthews
Design of water treatment plants; desalination by distillation, reverse osmosis, electrodialysis, freezing; water resources development. Prerequisite: 336L. <Spring>

*440. **Arid Land Engineering.** (3) Huzarski
Engineering studies related to problems of air, water, ground, and culture, relevant to arid and semi-arid regions. Prerequisite: senior standing and permission of instructor. <Offered upon demand>

***450. Introduction to Probabilistic Methods in Engineering.** (3)
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 311 or equivalent and permission of instructor. <Offered upon demand>

***452L. Computer Applications in Civil Engineering.** (3) Abbott
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: 102L or EE&CS 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: 102L or EE&CS 336, Math 311 or equivalent. <Spring 1972 and alternate years>

***461. Soil Engineering for Highways and Airfields.** (3) Carney, Clough
Soil classification, soil surveys, air photo interpretation, engineering soil maps, subsurface drainage, frost action, excavation and embankments, stabilization, slope stability, field and laboratory testing. Prerequisite: 360L. <Spring>

***462. Engineering Foundations.** (3) Carney, Clough, Triandafilidis
Application of principles of soil mechanics to analysis and design of footings, piles, caissons, cofferdams, and other substructures. Prerequisite: 360L. <Spring>

***463. Intermediate Soil Mechanics.** (3) 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
Construction methods and equipment as utilized on building and engineering construction projects. Equipment selection and field procedures on excavation, concrete, tunneling, foundations, and pile driving. Prerequisite: senior standing. <Fall>

***471L. Building Construction.** (3) Gafford
Engineering and architectural details within the framework of a building; floor and roof systems; bearing curtain walls; use and relative costs of materials; building codes; selected field trips. Prerequisite: senior standing in Engineering or permission of instructor. 2 lectures, 3 hrs. lab. <Offered upon demand>

***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>

***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) M. May
Application of engineering principles to the problems of highway traffic; traffic counts, origin and destination surveys, accident studies, traffic estimates, planning studies; highway and intersection capacities; traffic control; geometric design principles. Prerequisite: senior standing in 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, G. May, Omid'varan
Comprehensive presentation of matrix structural analysis; displacement method; force method; energy principles. Analysis of two and three dimensional framed structures by the direct stiffness method. Introduction to the finite element method. Prerequisite: 415 or permission of instructor. <Spring>

***502. Finite Element Methods in Solid Mechanics.** (3) Johnson
Topics in finite element analysis with applications to problems in a two and three dimensional, solid continuum. Prerequisite: permission of instructor. <Fall>

***505. Advanced Reinforced Concrete.** (3) Hulsbos
Behavior of reinforced concrete members and structures; ultimate strength design; review of current literature. Prerequisites: 306, 411. <Fall>

***506. Prestressed Concrete.** (3) Hulsbos
Theoretical and practical aspects of behavior and design of prestressed concrete structures. Prerequisite: 411. <Spring 1973 and alternate years>

***507. Design of Concrete Plates and Shells.** (3) Hulsbos
Design of slabs, folded plates, and thin shell structures. Principles of ultimate strength, limit design, and yield line theories. Prerequisite: 411. <Spring 1974 and alternate years>

***510. Advanced Structural Design in Metals.** (3) Johnson, Omid'varan
Structural design of frames, bridges, cable structures, structural lattices and light gage cold formed members. Relation of code requirements to theoretical and experimental studies of elastic and inelastic structural behavior. Prerequisite: 324L. <Fall>

***516. Theory of Plates.** (3) Cottrell, G. May, Omid'varan
Classical plate theory; behavior of discrete and continuous plate structures. Boundary value problems, and analysis of ribbed and folded panels. Numerical methods of solution. Selected topics. Prerequisite: 401 or permission of instructor. <Spring 1974 and alternate years>

***517. Discrete and Macro Mechanics.** (3) Omid'varan
Discrete synthesis of continuous elastic media. Numerical and closed field solutions to the discrete mathematical models of a continuum. Field solutions to the stability and stress analysis of interconnected elastic systems. Introduction to macro mechanics concerning behavior of composite discrete-continuum elastic media. Prerequisite: permission of instructor. <Spring 1974 and alternate years>

***518. Elastic Stability.** (3) Cottrell, Omid'varan
General concept of stability of elastic systems and its connection with eigenvalue problems; elastic and inelastic stability of columns, beam-columns, frames and plates; torsional instability, dynamical stability. Special topics such as stability of nonlinear systems, nonconservative problems, discretized mathematical models. Prerequisites: 402, Math 312, or permission of instructor. <Spring>

***519. Theory of Shells.** (3) Cottrell, Omid'varan, Schreyer
(Also offered as ME 519). Theory of surfaces, general theory of elastic shells with small displacements, membrane and bending theory, various approximate theories. Special topics. Prerequisites: 402 and Math 312. <Spring>

***520. Vibration of Elastic Systems.** (3) Cottrell
Response of discrete and continuous dynamical systems, damped and undamped, to harmonic and arbitrary time-dependent loads. Fourier and Laplace transform methods, convolution integrals. Energy methods, Lagrange's equations, and Hamilton's principle. Prerequisites: 421 or ME 414, and Math 312. <Fall>

***521. Design of Structures for Dynamic Loads. (3)** Cottrell
Nature of dynamic loading from earthquakes and bomb blasts; nature of dynamic resistance of structural elements and complete structures; criteria for design of blast- and earthquake-resistant structures; application to actual problems. Prerequisites: 421 or ME 414, 501. <Offered upon demand>

***523. Random Vibrations. (3)** Cottrell
(Also offered as ME 523.) Introduction to mathematical description of stochastic processes. Fourier transforms; power spectral density and auto-correlation functions, analysis of response of mechanical systems to random excitation. Properties of narrow band Gaussian distributions. Applications of vibration problems in road vehicles, ships, airplanes, and space vehicles. Prerequisite: 520 or permission of instructor. <Fall 1973 and alternate years>

***530. Radiological Health. (3)**
Atomic structure. The nature of radiation and its interactions with matter, detection, statistics of counting, shielding, biological effects. Reactors, radioactive waste handling, environmental control. Prerequisite: permission of instructor. <Offered upon demand>

***531. Advanced Water Treatment and Plant Design. (3-4)**
The theory and practice of water treatment. Chemistry of coagulation, softening, disinfection, demineralization. Unit processes of flocculation, sedimentation, filtration, and demineralization. Plant hydraulics. A design problem must be completed to receive four hours credit. Prerequisite: permission of instructor. <Fall 1973 and alternate years>

***532. Advanced Waste Water Treatment and Plant Design. (3-4)**
The theory and practice of waste water treatment. Biological waste treatment, unit processes, plant hydraulics, and stream sanitation. A design problem must be completed to receive four hours credit. Prerequisite: permission of instructor. <Fall 1972 and alternate years>

***533. Water Resources Engineering. (3)**
An analysis of river basin development control. Legal and economic factors in water use and reuse. The American experience in political organization for river basin control. Fundamentals of mathematical models for optimizing river basin development. Prerequisite: permission of instructor. <Offered upon demand>

***534L. Advanced Sanitary Lab. (3)**
Advanced technological procedures applied to water analysis. Atomic absorption, flame emission, spectrophotometry, manometric techniques, design of experiments, pilot plant operations. Prerequisite: permission of instructor. 1 lecture, 6 hrs. lab. <Offered upon demand>

***535. Open Channel Hydraulics. (3)** Carney, Martinez
Surface curves in open channels; steady and unsteady flow; boundary resistance; standing waves in supercritical flow; hydraulic jump; surges and waves; slowly varied flow involving storage. Prerequisite: 332. <Offered upon demand>

***536. Hydraulic Structures. (3)** Carney, Martinez
Design of hydraulic structures such as spillways, stilling basins, concrete dams, canals, measuring devices, sediment excluders, and other hydraulic devices. Prerequisite: 535. <Offered upon demand>

***551-552. Problems. (1-3 hrs. each semester)**
Advanced reading, analysis, design, or research.

***560. Advanced Soil Mechanics. (3)** Carney, Clough, Triandafilidis
Selected topics in advanced soil mechanics. Prerequisites: 401 or 402, 463. <Offered upon demand>

***561L. Advanced Soil Mechanics Laboratory. (2)** Carney, Clough
Advanced soil testing procedures, laboratory study of the mechanical and physical properties of soil, soil-exploration. Corequisite: 463. 1 lecture, 3 hrs. lab. <Fall 1972 and alternate years>

***562. Advanced Foundation Engineering. (3)** Carney, Clough, Triandafilidis
Theoretical and practical aspects of various foundation design problems; footings, mats, piles, piers and earth retaining structures, subsoil exploration programs and methods of soil sampling. Prerequisite: 463. <Fall>

***563. Earth Structures. (3)** Carney, Clough
Analysis and design of earth dams, embankments, and excavations; flow nets, slope stability. Prerequisite: 463. <Spring>

***568. Physico-Chemical Properties of Soils.** (3)
Study of physico-chemical aspects of soils and their relation to soil engineering problems. Prerequisite: 463. <Offered upon demand>

***572. Construction Project Management.** (3) Clough
Management principles as applied to the time and cost control of a construction project; planning and scheduling using CPM, least cost expediting, resource leveling, field cost accounting. Prerequisite: permission of instructor. <Spring>

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

***601. Structural Reliability.** (3)
Application of the theory of probability and statistics in structural engineering; study of probable values of loads and resistances of structural elements; safety analysis and reliability prediction of structural and mechanical systems; decision analysis in structural engineering; reliability-based designs. Prerequisite: 450 or Math 346. <Offered upon demand>

***623. Random Processes in Mechanics.** (3)
Review of probability theory and random vibration; response of simple nonlinear systems to stationary random loading; diffusion of probability of states of a dynamic system; the Fokker-Planck equation; first passage problems; random fatigue; reliability function of mechanical systems under random loading. Prerequisite: 523 or 601 or permission of instructor. <Offered upon demand>

***650. Research.** (1-6 to a maximum of 12)

***660. Soil Dynamics.** (3) Triandafilidis
Behavior of soils subjected to loads, elastic and inelastic wave propagation in soils, ground motion, machine foundations, wave effects on structures, seismic studies, pile driving, and dynamic soil testing. Prerequisites: 401 or 402, 463. <Offered upon demand>

***691-692. Seminar.** (1-3 hrs. each semester) <Fall, Spring>

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

ENGINEERING, ELECTRICAL AND COMPUTER SCIENCE

PROFESSORS V. W. Bolie (Chairman), W. J. Byatt, A. Erteza, W. W. Grannemann, S. Karni, R. D. Kelly, A. H. Koschmann, H. D. Southward; ASSOCIATE PROFESSORS L. T. Boatwright, M. D. Bradshaw, J. Djuric, H. K. Knudsen, D. P. Petersen, R. Williams, D. Sparks; ASSISTANT PROFESSORS R. Colclaser, J. T. Cordaro, R. C. DeVries, S. Gurbaxani, B. Peterson; ADJUNCT PROFESSORS L. Baker, J. A. Cooper, H. Demuth, J. Morris, S. D. Stearns, and R. Thomas (part-time).

CURRICULUM
See p. 241.

203. Introduction to Electrical Engineering I. (3)
Basic electrical elements and sources. Ohm's Law and Kirchhoff's Laws. Resistive networks, node and loop analysis. Superposition. Sinusoidal sources and complex representation: impedance, phasors, power. Three-phase circuits. Semiconductors. Simple electronic circuits. Corequisite: Math 264. <Summer, Fall, Spring>

204. Introduction to Electrical Engineering II. (3)
Electronic devices. Rectifier circuits. Triode, pentode and transistor amplifier models. Electronic instrumentation and measurements. Basic open-loop and closed-loop control 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: 206L; corequisite: 213. 1 lecture, 3 hrs. lab. <Spring, Summer>

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. Prerequisite: C or better in 203; corequisite: 207L, Math 265. <Summer, Fall, Spring>

313. Circuits and Systems II. (4)
General study of linear lumped time-invariant devices: differential equations, transfer functions, frequency response, input-output characteristics. Introduction to analog and digital simulation. Prerequisite: 213. <Summer, Fall, Spring>

****321. Electronic Circuits I.** (3) Boatwright, Kelly
Fundamentals of linear and nonlinear transistor and vacuum tube circuits, amplifiers, feedback theory, oscillators modulation and demodulation. Prerequisite: grade of C or better in 213; corequisite: 325L. <Fall, Spring>

****322. Electronic Circuits II.** (3) Boatwright, Kelly
Continuation of 321. Prerequisite: 321; corequisite: 326L. <Fall, Spring>

****325L. Electronics Laboratory I.** (2) Boatwright
Prerequisite: 207L; corequisite: 321. 1 lecture, 3 hrs. lab. <Fall, Spring>

****326L. Electronics Laboratory II.** (2) Kelly
Continuation of 325L. Prerequisite: 325L; corequisite: 322. <Fall, Spring>

§*335. Introduction to Digital Computers. (3) Erteza, Sparks
Computer organization, computer logic, binary and decimal arithmetic units, coding and basic programming, including hands-on use of the IBM 1620 Computer. Prerequisite: Math 265 or equivalent, or permission of instructor. <Summer, Fall, Spring>

****336. Introduction to Digital Computer Programming.** (2) Sparks
Flow diagramming, introduction to time-share system control language, FORTRAN programming. Emphasis is on solution of problems using the computer. Prerequisite: Math 265 or equivalent, or permission of instructor. <Summer, Fall, Spring>

§*337. Introduction to Computer Science. (3)
A thorough introduction to algorithms, stored program computers, and programming languages. Concept and properties of an algorithm, language and notation for describing algorithms. <Fall>

361. Electromagnetic Fields and Waves I. (3) Bradshaw, Djuric
Static electric and magnetic fields; vector calculus; Maxwell's equations; plane, cylindrical and spherical waves. Applications to transmission lines, wave guides, coaxial lines and antennas. Prerequisite: grade of C or better in 213; corequisite: 313. <Fall, Spring>

362. Electromagnetic Fields and Waves II. (3) Bradshaw, Djuric
Continuation of 361. Prerequisite: 361. <Fall, Spring>

***370. Physical Properties of Electrical Engineering Materials.** (3)
Electric, dielectric, and magnetic properties of materials pertaining to their electrical engineering applications. Qualitative description of physical electronics as applied to electronic, thermoelectric, magnetic, superconducting, and quantum electronic devices. Prerequisite: Physcs 262. <Spring>

***400. Methods for Systems Analysis.** (3)
Theory and application of matrices and linear vector space to systems analysis; linearity and linear operators; complex variables, Fourier series and Fourier transforms; Laplace and z-transforms. Prerequisite: senior standing. <Fall, Spring>

***401. 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: senior standing. <Spring>

***407. Modeling in Biomedical Engineering.** (3) Williams
The application of engineering techniques to modeling of physiological systems. Prerequisite: Senior standing or permission of the instructor. <Offered upon demand>

***408. Bioelectric Phenomena.** (3) Williams
Biomedical engineering approach to electrodes, passive and active membrane phenomena, volume conductor fields, electrocardiography and electroencephalography. Prerequisite: Math 311. <Offered upon demand>

§ Not available for graduate credit for students specializing in computers.

****409. Electrical Circuits, Devices, and Systems.** (3) Williams
(Also offered as Art 409) A theoretical and practical survey of electrical circuits, devices, and systems intended primarily for majors in the visual arts. Prerequisite: Art 313, or permission of instructor. <Fall>

***411. Topics in Network Theory.** (3)
Topology, linear transformations, state descriptions, stability, energy considerations and realizability, sensitivity. Prerequisite: 313 or permission of instructor.

***421. Electronics III.** (3) Kelly
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) Kelly
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>

***425L. Electronics Laboratory III.** (2) Kelly
Prerequisite: 326L; corequisite: 421. 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. Simulation Languages.** (3) B. Peterson
Use of digital computers to simulate physical systems using simulation language such as SIMSCRIPT. Structure of simulation language will be studied and Model Languages will be constructed. Prerequisite: 335 and 336 or equivalent. <Fall>

***431. Cobol and Decision Tables Techniques.** (3)
Study of structure and syntax of COBOL programs of DATA files (sequential, random, index sequential). Decision table techniques discussed as they apply to documenting and manipulating DATA files. Prerequisite: 336 or equivalent programming knowledge. <Fall>

***432. Programming in PL/1.** (3)
List processing, string and symbol manipulation using PL/1. Table searching and sorting techniques. DATA attributes of PL/1 covered as well as the four classes of PL/1 storage. Prerequisites: 336 and 495. <Spring>

***433. Digital Computer Graphics and Communications.** (3) Sparks
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 336 or equivalent. <Fall>

***434L. Logic Design Laboratory.** (2) DeVries
Corequisite: 438. 1 lecture, 3 hrs. lab. <Fall, Spring>

***435. Introduction to Assembly Language Programming.** (3)
Study of assembly language programs using the IBM 1620 and emphasizing documentation and flow charting. Expansion to MACROS and FOCAL, etc. Prerequisites: 335, 336 or equivalent. Not a repetition of former 435 (Introduction to Digital Computers). <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. Prerequisites: 335, 336 or equivalent. Not a repetition of former 436L (Introduction to Digital Computer Programming). <Spring>

***437. Digital Computer Operating Systems.** (3)
Introduction to Time-Share Operating System, basic functions of the system, Control Cards, and System Control options. Assembly Language programming using the IBM 360. Use of the UNM IBM 360/40 required. Prerequisite: 435. <Fall, Spring>

***438. Logic Design.** (3) DeVries
Number systems and codes; Switching Algebra; combinatorial circuits; fundamental-mode, pulse-mode, and clocked-sequential circuits; hazards. Prerequisite: senior standing. <Fall, Spring>

***439. Computer Methods in Engineering Analysis. (3)** Erteza
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. <Spring>

***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>

***445. Control and Systems Components. (3)**
Examination of the dynamic characteristics of electrical, mechanical, hydraulic, thermal, and other components and structures used for signal and power transfer in open-loop and feedback systems. Prerequisite: 313. <Fall>

***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. <Spring>

***448L. Servomechanisms Laboratory. (2)**
Corequisite: 446. 1 lecture, 3 hrs. lab. <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 Theory. (3)** Gurbaxani
Theoretical and practical considerations associated with microwave devices and circuits. Prerequisite: 362. <Spring>

***465L. Microwave and Traveling Wave Laboratory. (2)**
Corequisite: 462. 1 lecture, 3 hrs. lab. <Spring>

***470. Solid State Physical Electronics. (3)** Southward
Physical phenomena in solid state electronic devices, energy band theory of solids, application of solid state electronic phenomena to diodes, transistors, and related devices. Prerequisite: 370 or Physcs 330; pre- or corequisite: 321. <Fall>

***472. Discrete and Integrated Semiconductor Devices. (3)**
Device models, semiconductor technology, and integrated circuit fundamentals. Prerequisite: 470. <Spring>

***475L. Solid State Experimental Techniques. (2)**
Experimental investigation of solid state phenomena and introduction to semiconductor device processing. 1 lecture, 3 hrs. lab. Prerequisite: 370 or Physcs 330; suggested corequisite: 470. <Fall>

***476L. Semiconductor Technology Laboratory. (2)**
Silicon planar technology processing techniques. Process evaluation and control. Integrated and discrete device construction. 1 lecture, 3 hrs. lab. Prerequisite: 470 or permission of instructor. <Spring>

***480. Electric Power Systems Analysis. (3)** Bradshaw
Generation and distribution of electric power; computer modeling of power distribution systems. Prerequisite: 203 and knowledge of FORTRAN. <Fall>

490. Seminar in Laboratory Teaching Techniques. (1)
Prerequisite: senior standing and permission of instructor. <Fall, Spring>

491. Undergraduate Problems. (1-3 hrs. per semester) <Fall, Spring>

493. Honors Seminar. (1-3)
A special seminar open only to honors students. Registration requires permission of the Department Chairman. <Fall, Spring>

494. Honors Individual Study. (1-6)
Open only to honors students. Registration requires permission of the Department Chairman and of the supervising professor. <Fall, Spring>

***495, 496, 497. Special Topics. (1-3 hrs. each semester)‡**
Prerequisite: senior standing and permission of instructor.

***498. Seminar. (1-3)**
Prerequisite: senior standing and permission of instructor. <Fall, Spring>

499. Seminar. (1-3)
Prerequisite: 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. Basis of Modern System Theory. (3)**
State space representation of dynamic systems. Matrix properties and transformations, state transition matrices, state trajectories. Concepts of observability, controllability, and stability of linear dynamic systems. Prerequisite: 400. <Fall>

****502. Electrical Engineering Principles for Advanced Students. (3)**
Electrostatics, steady currents, magnetostatics, and Maxwell's equations. Lumped circuit approximation. Linear circuits, transforms, transients, and feedback. For students not majoring in Electrical Engineering. Prerequisites: knowledge of differential equations, vector analysis, and elementary electric circuits. <Offered upon demand>

***506. Methods of Operation Research I. (3)**
Methods of linear integer and dynamic programming as applied to systems engineering. Prerequisite: 400. <Fall>

***507. Methods of Operations Research II. (3)**
A continuation of 506, this course treats problems of mathematical programming under uncertainty. Necessary probabilistic and decision theoretic concepts are developed and subsequently applied in various systems engineering models, including queueing, inventory control, Markov processes, systems simulation, and parametric sensitivity analysis. Prerequisite: 506 or equivalent or instructor's consent. <Spring>

***512. Linear Network Theory. (3)** Karni
Graph theory and applications to network analysis. General network analysis; network functions. State equations. Characteristic responses and integral solutions. Time varying networks. Prerequisite: 500. <Spring>

***532. Theory of Automata. (3)** Erteza
Introduction to automata theory, development of the theory of sequential machines, measurement, control and identification of sequential machines. The development of the theory of linear sequential and Turing machines. Prerequisite: 438. <Fall>

***533. Image Processing by Digital Computer. (3)**
Theory and practice of processing pictures by digital computers, with emphasis on the application of discrete linear systems theory to image processing. Application of picture filtering in image restoration, enhancement, and pattern recognition. Prerequisite: knowledge of Fourier Analysis, linear system theory, and digital computers. <Offered upon demand>

***534. Symbol Manipulation and Heuristic Programming. (3)** Sparks, Stearns
Heuristic vs Algorithmic methods, LISP and other relevant programming methods, game playing programs, symbolic integration and differentiation, search techniques, simulation of learning. Applications to pattern recognition and information retrieval. Prerequisites: 431, 432, or equivalent. <Fall>

***535. Principles of Threshold Logic. (3)** Cooper
Fundamental concepts of symmetry classes, dual functions, unateness, monotonicity, and Trees. The Tree approach is used for single-gate and multiple-element synthesis. Includes linear programming and adaptive realization. Prerequisites: 335 and 438. <Spring>

***536. Advanced Logic Design. (3)**
Application of modern algebra, lattice theory, Boolean algebra to logic design; cellular n-cube; minimization theory; memory elements; sequential machine theory; tree circuits. Prerequisite: 438. <Fall 1972 and alternate years>

***537. Formal Languages and Automata. (3)**
Topics in the theory of context-free languages and associated machines and decision problems. Abstract families of languages. Computational complexity of languages. Prerequisite: 532. <Spring>

***538. Design of Digital Systems.** (3) DeVries
Over-all design of digital systems; basic gating and storage elements, digital control units; arithmetic units; input and output to digital systems; digitalization of analog data. Prerequisite: 438. <Spring>

***539. Scientific Computing for Engineers.** (3)
Review of numerical techniques for interpolation, integration, smoothing, linear algebra, etc. Introduction to topics in engineering computation; transfer functions and transforms, digital filtering, time series analysis, etc. Prerequisites: knowledge of FORTRAN, advanced calculus, LaPlace transforms. <Fall>

***541. Random Signals in Engineering Systems.** (3) Koschmann, Petersen
Statistical description of random signals in communication and control systems. Transformation associated with linear and nonlinear systems. Application to filtering, interpolation and prediction problems. Prerequisites: 400, 401 or equivalent. <Fall>

***542. Statistical Communication Theory.** (3) Koschmann, Petersen
Statistical theory of signal transmission. Markov systems, information measures, channel capacity, and coding theorems. Detection and extraction of signals in noise background based on statistical decision theory. Prerequisites: 400, 401 or equivalent. <Spring>

***546. Automatic Control Theory.** (3) Knudsen
State-space formulation of control theory; stability and controllability; control of linear and nonlinear systems; sampled data systems, with application to digital computer controlled processes; optimal control. Prerequisites: 446 and 500. <Spring>

***547. Neural Networks.** (3)
Semiconductor properties of biological fluids, membranes, and junctions. Partial differential equations of electrochemical inhomogenities and transients. Cellular and fross electrical manifestations of neural activity. Communication theory of the nervous system. Optical and acoustic pattern perception. Prerequisite: graduate standing in Mathematics, Physics, Physiology or Engineering. <Spring>

***551-552. Problems.** (1-3 each semester) <Offered upon demand>

***561. Electromagnetic Waves I.** (3)
Electrostatic and magnetostatic problems. Maxwell's equations and their application to plane, cylindrical and spherical electromagnetic waves. <Fall>

***562. Electromagnetic Waves II.** (3)
Continuation of 561. Prerequisite: 561. <Spring>

***563. Direct Energy Conversion.** (3)
Theory of interconversion of various forms of energy. Exposition of the theories of thermoelectric, thermionic, photovoltaic, electrochemical, magnetohydrodynamic and stimulated emission effects and their application to devices. An elementary knowledge of semiconductor device theory, quantum mechanics, and electromagnetic fields at the undergraduate level is required. <Offered upon demand>

***570. Physical Bases of Solid State Engineering.** (3) Byatt
Classical, quantum, and statistical principles of solid state engineering. Crystal properties and band structure of solids. Prerequisite: Physcs 330. <Fall>

***572. Physics of Semiconductors.** (3)
Thermal properties and effects, equilibrium and non-equilibrium carrier statistics, carrier diffusion and drift, magnetic effects and surface effects. Prerequisite: 570. <Spring>

***573. Magnetic and Dielectric Properties of Solids.** (3)
Dielectrics, ferroelectrics, magnetism, magnetic resonance phenomena, optical properties. Prerequisite: 570. <Offered upon demand>

***574L. Processing Techniques in Solid State Technology.** (3)
Semiconductor technology, thin films, thick films, and hybrid microcircuits. Individual and group experimental projects. Pre- or corequisite: 470. <Spring>

***575. Theory of Solid State Devices.** (3)
Physics of planar transistors, junction field effect transistors, metal-insulator-semiconductor devices, metal-semiconductor contacts and devices, and other related devices. Prerequisite: 470. <Spring>

***590. Seminar in Engineering Education.** (1)
Prerequisite: permission of instructor. <Fall, Spring>

***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.

***611. Methods of Network Synthesis.** [Passive Network Synthesis] **(3)** Karni
Realizability conditions. Positive-real matrices. Lumped, linear, time invariant synthesis. Approximation methods. Topics in multiterminal synthesis. Distributed and active network synthesis. Prerequisite: graduate standing. <Fall 1973, and alternate years>

***613. Nonlinear Systems. (3)** Karni, Knudsen
Stability of linear time-variant and nonlinear systems by the direct method of Liapunov, perturbation theory and classical techniques. Lure and Popov stability theory. Prerequisite: 500. <Spring 1973 and alternate years>

***614. Active Network Synthesis. (3)** Karni
Controlled sources, gyrators, negative immittance converters. Realizability conditions for lumped, linear, active networks. Active RC one-port synthesis. Negative resistance amplifiers. Non-reciprocal lossless active two-port synthesis. Prerequisite: 611. <Offered upon demand>

***615. Topology of Systems. (3)**
Advanced topics in graph theory. Topological synthesis of linear multiport networks, loop and cut-set matrices and communication nets. Prerequisite: 512. <Offered upon demand>

***635. Theory of Micro Programming. (3)** Erteza
Microprogramming is used as a technique for the design and implementation of the control function of a data processing system. Includes extension of logic design, mechanical languages, programming system architecture and systems engineering. Prerequisite: 538. <Fall>

***636. Decomposition Theory. (3)** DeVries
Multilevel Boolean minimization; functional decomposition (Curtis-Ashenhurst and Roth-Karp); machine decomposition. Prerequisite: 536 or permission of instructor. <Spring>

***639. Scientific Computing for Engineers II. (3)**
Continuation of topics in 539; comparison of digital and continuous systems, digital simulation of continuous systems, rational approximations, analog and digital filter design, random sequences, etc. Prerequisite: 539. <Spring>

***641. Information Theory and Coding. (3)** Koschmann
Advanced topics in information and coding theory. Prerequisite: 542. <Offered upon demand>

***643. Special Topics in Communication Theory. (3)**
Advanced topics from the areas of sampled-data systems, multi-variable and multi-dimensional systems, coding, and adaptive signal processing, detection theory. <Offered upon demand>

***646. Optimal Processes. (3)** Knudsen
Optimal control analysis by calculus of variations, maximum principle and mathematical programming techniques. Applications to system design. Prerequisite: 546. <Fall 1973 and alternate years>

***647. Introduction to Artificial Intelligence. (3)**
Real and Computer simulated operations with multi-dimensional signals, hybrid conversions, plastic memories, adaptive logic, neural networks, learning mechanization, trainable machines, compressible matrices, automatic abstracting, and self-organizing systems. Prerequisites: graduate standing in Math, Physics, Physiology or Engineering and permission of instructor. <Spring>

***649. Special Topics in Control Theory. (3)**
Topics to include nonlinear, distributed and adaptive control processes; computation of optimal trajectories and plant identification—with application to engineering systems and biocybernetics. Prerequisite: 546. <Offered upon demand>

***651-652. Problems. (1-3 hrs. each semester)** <Offered upon demand>

***661. Antennas. (3)** R. H. Williams
Elements in antenna theory; pattern synthesis. Cylindrical antenna theory. Aperture antennas; Babinet's principle. Fundamentals of traveling wave antennas, structures with reflectors, and lenses. Prerequisite: 562. <Offered upon demand>

***662. Microwave Techniques. (3)** Byatt
The interactions of electronic currents with microwave fields with applications to magnetrons, klystrons, traveling wave tubes and related physical devices; wave guide circuits. Prerequisite: 562. <Offered upon demand>

***663. Magnetohydrodynamics.** (3) Byatt, Erteza, Grannemann
Particle dynamics in electromagnetic field. Cyclotron and Larmor frequency. Macroscopic viewpoint and Boltzmann equation. Perturbation concepts. Study of pinch phenomena and pinch stability. Current experimental machines. Prerequisite: 562. <Fall 1971 and alternate years>

***664. Advanced Electromagnetic Propagation.** (3) R. H. Williams
Theories dealing with anomalous wave propagation; evaluation of fields considering a spherical earth and the ionosphere; use of geometric-optical and residue series to compute fields; propagation through a non-homogeneous atmosphere. Prerequisite: 562. <Offered upon demand>

***669. Seminar in Electromagnetic Waves.** (3) <Offered upon demand>

***671. Charge Transport Phenomena in Solids.** (3) Byatt, Grannemann
Theory of charge transport in solids involving such topics as band structure, the Fermi surface, scattering by electrons, electron-photon interaction, scattering by lattice imperfections, grain boundaries, dislocations and electron theory of imperfection resistance, surface and size effects. Prerequisites: 570 and permission of instructor. <Spring 1972 and alternate years>

***672. Quantum Electronics.** (3) Southward
Theoretical and experimental aspects of lasers and masers. Prerequisite: 570 or permission of instructor. <Spring 1972 and alternate years>

***673. Radiation Effects in Solid State Devices.** (3) Southward
Effects of ionizing and damaging radiation on solid state devices and related materials. Prerequisite: 572 or permission of instructor. <Fall>

***679. Seminar in Solid State Theory.** (3) <Offered upon demand>

***695, 696, 697, 698. Seminar.** (3, 3, 3, 3) <Offered upon demand>

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

ENGINEERING, MECHANICAL

ASSOCIATE PROFESSOR M. W. Wildin (Chairman); PROFESSORS B. Albrecht, R. C. Dove (Dean), A. V. Houghton, F. D. Ju, V. J. Skoglund; ASSOCIATE PROFESSORS W. E. Baker, K. T. Feldman, Y. C. Hsu, C. G. Richards, H. L. Schreyer[1]; ASSISTANT PROFESSORS G. F. Cochrane, A. O. Lebeck, F. C. Wessling, Jr.

CURRICULUM
See p. 243.

201L. Introduction to Engineering Design. (3)
Study and apply methods of engineering design to satisfy observed needs. Creativity and design process are emphasized. Introduction to engineering materials and manufacturing processes is provided. 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 265. 2 lectures, 3 hrs. lab. <Summer, Fall, Spring>

300. Mechanical Engineering Analysis. (3)
Principles and applications of similitude and analysis of mechanical systems. Prerequisite: 206. <Fall, Spring>

301. Thermodynamics. (3)
Principles of thermodynamics. First and second laws, properties and equations of state. Prerequisites: Chem 101L, Physcs 161; corequisite: Math 265. <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, Spring>

**317. Fluid Mechanics. (3)
Basic concepts and principles of viscous compressible fluids, including continuity, momentum, and energy principles. Applications to incompressible, laminar, or turbulent flows over flat plates, inside of tubes, and around solid objects. Prerequisite: 206L; corequisite: 301. <Fall, Spring>

318L. Mechanical Engineering Laboratory I. (2)
Experiments which relate basic physical concepts to mass, length, time and temperature. Techniques of measurements. Corequisites: 301, 314L, 317. 6 hrs. lab. <Fall, Spring>

**320. Heat Transfer. (3)
Principles and engineering applications of heat transfer by conduction, radiation, and free and forced convection. Prerequisites: 300, 301, 317. <Fall, Spring>

**341. Air Pollution Control. (3)
(Also offered as Ch E 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 public. Information presented applied to study of local problems. Practical projects in pollution control conducted. Prerequisites: Math 264, Physcs 161, Chem 101L, or equivalents, and junior standing. <Fall>

350. Engineering Economy. (3)
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)
Experiments and analysis of simple physical systems which illustrate basic physical principles. Comparison of measured and calculated results; error analysis; analog computers. Prerequisites: 302, 318L, 320, 370 or permission of instructor. 6 hrs. lab. <Fall, Spring>

352L. Mechanical Engineering Laboratory III. (2)
Experimental engineering projects involving complex systems. Planning, fabrication, performance, analysis, and reporting of an original experiment. Prerequisite: 351L. 6 hrs. lab. <Offered upon demand>

355. Engineering Statistics and Quality Control. (3)
Statistical methods applied to quality control problems; significance tests; correlation analysis; sequential sampling; analysis of variance; design of experiments. Prerequisite: senior standing. <Fall 1972 and alternate years>

356. Industrial Engineering. (3)
A survey of Industrial Engineering principles, methods, and techniques used to assist management in making sound operational decisions. Prerequisite: senior standing, or permission of instructor. <Fall 1973 and alternate years>

357L. 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: ME 300, 314L; corequisite: CE 302. <Fall, Spring>

358L. Design of Solid Systems. (3)
Applications of mechanics of materials, materials science, and dynamic analysis to the design of elements of mechanical systems. Prerequisite: 357L. 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. <Spring>

363L. Analysis of Fluid Systems. (3)
Engineering analysis of fluid systems based on the principles of fluid mechanics, heat transfer, and thermodynamics. Prerequisites: 302, 317, 320, or permission of instructor. 2 lectures, 3 hrs. lab. <Fall>

**365. Environmental Control System Design. (3)
The design of systems for the conditioning and control of ambient environments for people, processes, equipment, or foods. Prerequisites: 301, 317, 320. <Spring>

370. Engineering Materials Science. (3)
(Also offered as CE 370.) The structure of matter and its relation to mechanical properties. Mechanical behavior of structural materials: metals, ceramics ana polymers. Prerequisite: CE 302; corequisite: 301. <Fall, Spring>

***401.** [492] **Advanced Mechanics of Materials.** [Stress Analysis of Mechanical Systems] **(3)**
(Also offered as CE 401.) State of stress and strain at a point, stress-strain relations; topics in beam theory such as unsymmetrical bending, curved beams, and elastic foundations; torsion of non-circular cross-sections; energy principles. Prerequisites: CE 302 and senior standing. <Fall>

***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 311. <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 311 or equivalent, and senior standing. <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 chairman. Prerequisite: 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. <Fall>

****461-462. Seminar. (1-3 hrs. per semester to a maximum of 6)**
Organized study by a group of students under faculty supervision. Prerequisite: 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: 302, 314L, 317; Math 311 or equivalent. <Fall>

***482. Energy Conversion.** [Energy Conversion Systems] **(3)**
Study of processes and systems for converting energy into useful work. Survey of energy supply and demands; energy and the economy; conversion principles; comparison of basic fuels—fossil, nuclear, hydro, solar, winds, and others; comparison and analysis of conversion processes including heat engines, electro-mechanical, thermoelectric, fuel cells, solar cells, thermionic and magnetohydrodynamic techniques; environmental pollution factors will be considered. Prerequisite: 301. <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>

***500. Numerical Techniques in Mechanical Engineering. (3)**
Numerical techniques for solving ordinary and partial differential equations which arise in Mechanical Engineering. Emphasis on applications of implicit, explicit, and iterative methods. Prerequisite: Math 475. <Offered upon demand>

***501. Heat Conduction. (3)**
Formulation of equations and boundary conditions for heat transfer problems involving conduction. Techniques of solution, including: separation of variables, Laplace transforms, finite differences, and variational methods. Use of a digital computer is required. Prerequisites: 320, 503, Math 312, or permission of instructor. <Spring>

***503. Advanced Fluid Mechanics I. (3)**
General principles and applications of fluid mechanics. Prerequisites: 206L, 301, Math 311, or their equivalents. <Fall>

***506. Advanced Thermodynamics I. (3)**
Precise development of thermodynamic definitions, principles, and analytical methods. Prerequisites: 301, 302, Math 311, or equivalents. <Fall>

***507. Similitude in Engineering. (3)**
Basic theory and applications of similitude. Metrology, similarity, dimensional analysis, and design and interpretation of similar and distorted models. Prerequisites: 501 or 503 or 516. <Offered upon demand>

***509. Advanced Gas Dynamics. (3)**
Two-dimensional flow of ideal gases including shock waves, friction and heat transfer. Prerequisites: 501, 503. <Offered upon demand>

***510. Boundary Layers. (3)**
Derivation of boundary layer equations, similarity solutions, integral methods and experimental results for laminar boundary layers. Stability of laminar boundary layers. Boundary layer transition. Turbulent fluctuations and transport. Turbulent boundary layers. Prerequisite: 503. <Offered upon demand>

***511. Radiant Heat Transfer. (3)**
Principles of thermal radiation, thermodynamic and electromagnetic bases of material property relations, basic equations of radiative transfer, techniques of analysis, including approximate methods. Prerequisite: 320. <Offered upon demand>

***514. Variational Mechanics. (3)**
Variational method, energy principles, direct methods for mechanical problems, advanced topics. Prerequisite: At least one semester of graduate study or permission of instructor. <Offered upon demand>

***515L. Experimental Stress Analysis. (3)**
Modern techniques for measurement of strains and stresses, including studies of mechanical gages, electrical gages and circuits, brittle coating, photoelasticity, and Moiré fringe method. 2 lectures, 3 hrs. lab. <Offered upon demand>

***516. Elasticity I. (3)**
Field theory of elasticity; Saint Venant's problems; introduction to plane theory of elasticity. Prerequisite: Math 311 or equivalent; corequisite: Math 312 or equivalent. <Fall>

***517. Elasticity II. (3)**
Muskhelishvili method in plane theory of elasticity, three dimensional theory of elasticity, advanced topics. Prerequisite: 516; corequisite: Math 313. <Offered upon demand>

***519. Theory of Shells. (3)**
(Also offered as CE 519) Theory of surfaces, general theory of elastic shells with small displacements, membrane and bending theories, various approximate theories, special topics. Prerequisites: CE 402, Math 312. <Offered upon demand>

***520. Analysis of Thermal Stresses. (3)**
Continuum theory of thermodynamics; coupled theory of thermoelasticity; plane problems of thermoelasticity; special topics. Prerequisite: 516. <Offered upon demand>

***523. Random Vibrations. (3)**
(Also offered as CE 523.) Introduction to mathematical description of stochastic processes, Fourier transforms, power spectral density and auto-correlation functions, analysis of response of mechanical systems to random excitation. Properties of narrow band Gaussian distributions. Applications of vibration problems in road vehicles, ships, airplanes, and space vehicles. Prerequisite: CE 520 or permission of instructor. <Offered upon demand>

***541. Tensor Analysis in Mechanics. (3)**
Tensor analysis in the affine and metric space, kinematics of motion, deformation analysis in continuum mechanics, theory of objectivity. Prerequisite: 402; corequisite: 503 or 516 or equivalent. <Offered upon demand>

***551-552. Problems. (1-3 hrs. each semester)**
Advanced reading, design or research.

***559. Design Project. (3)‡‡**
Studies of the design process and special topics in design; participation in a design project. Prerequisite: permission of instructor. <Offered upon demand>

***561-562. Special Topics. (1-3 hrs. each semester)**

***591-592. Seminar. (1-3 hrs. each semester)**

***599. Master's Thesis. (1-6 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

‡‡ May be repeated once for credit.

***603. Theoretical Fluid Mechanics. (3)**
Theoretical analysis of special fluid systems. Laminar flow and two and three dimensional potential flow. Use of special coordinates, complex variables, conformal mapping, free streamlines, sources and sinks. Prerequisites: 501, 503. <Offered upon demand>

***604L. Experimental Methods in Mechanics. (3)**
Modern techniques for the measurement of motion (including displacement, velocity, and acceleration); force; pressure; and temperature. The emphasis is on the measurement of transients. Prerequisite: 515L or permission of instructor. 2 lectures, 3 hrs. lab. <Offered upon demand>

***605. Convection. (3)**
Theory and experimental results for convection of single- and multi-component fluids. Prerequisites: 501, 503. <Offered upon demand>

***606. Kinetic Theory and Statistical Mechanics. (3)**
Principles of kinetic theory and statistical mechanics, and their application to engineering problems. Prerequisites: 506, Math 345. <Offered upon demand>

***607. Hypersonic Flow of Ideal Gases. (3)**
Basic concepts. Hypersonic similarity. Mach number independence. Small perturbation theory. Approximate methods. PLK method. Newtonian Theory. Applications to slender and blunt bodies. Prerequisites: 503, 509 or permission of instructor. <Offered upon demand>

***608. Hypersonic Flow of Real Gases. (3)**
Equilibrium properties of air to 10,000°K. Compressible boundary layers and their interactions. Non-equilibrium and high temperature effects. Applications to flow over slender and blunt bodies. Prerequisites: 503, 506, 509 or permission of instructor. <Offered upon demand>

***624. Nonlinear Theory of Elasticity. (3)**
Axioms of mechanics, stress tensors, constitutive equations of Green and Cauchy, hyperelasticity, hypoelasticity. General topics in elastostatics, finite elastic waves and elastic stability. Prerequisite: 541. <Offered upon demand>

***671. Mechanics of Inelastic Continuum. (3)**
Physical aspects of inelastic deformation. Constitutive equations of the inelastic (anelastic, viscoelastic, plastic, and viscoplastic) continuum. One-dimensional problems. General theorems and boundary value problems. Prerequisite: 516 or 503 or equivalent. <Offered upon demand>

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ENGINEERING, NUCLEAR

PROFESSOR G. A. Whan (Chairman); ASSOCIATE PROFESSORS W. L. Everett, J. A. Horak, R. L. Long, R. D. O'Dell; ASSISTANT PROFESSOR D. M. Lucoff; ADJUNCT PROFESSORS R. M. Jefferson, L. D. Posey.

***420.** [460] **Fundamentals of Nuclear Engineering. (3)** Everett, Posey
Radioactivity, nuclear reactions and cross-sections, conservation laws, elementary particles and particle distributions, neutron physics, and electromagnetic radiation. Recommended prerequisites: Physcs 330, Math 311. <Fall>

***423L.** [463L] **Radiation Measurements and Analysis. (3)** Long, Lucoff, Whan
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. Prerequisites: 420 or Physcs 330 and permission of instructor. 2 lectures, 3 hours 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>

***461. Power Reactor Technology. (3)** O'Dell
An introduction to nuclear power technology with emphasis on reactor heat generation and removal and the nuclear fuel cycle of both thermal- and fast-neutron power reactors. Prerequisites: 430, ME 320 or equivalent. <Spring>

***470. Materials for Nuclear Applications.** (3) Horak
Selection and fundamental properties of materials for nuclear applications; physical and extractive metallurgy as related to nuclear materials; behavior of materials under irradiation; corrosion of materials. Prerequisite: 430 or equivalent; Recommended CE 370. <Fall>

***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) Everett
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) Lucoff
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: startup, operating mode, burnup, tritium cycle, control. Prerequisite: 420 or equivalent. <Fall>

491. Undergraduate Problems. (1-3) <Summer, Fall, Spring>

***510-511. Nuclear Reactor Theory I & II.** (3, 3)
Basic theory of reactors; multiplication, slowing down, diffusion and transport of neutrons; applications to bare, reflected, homogeneous, heterogeneous, thermal, and fast reactor systems; introduction to reactor dynamics. Pre- or corequisite: 420, Math 312. <510-Fall, 511-Spring>

***513L-514L. Nuclear Engineering Laboratory I & II.** (3, 2)
Laboratory studies to demonstrate neutron and gamma reactions in fuels, moderators, and shields. Experiments to demonstrate the characteristics and operation of nuclear reactors, and nuclear research techniques. Prerequisites: 423L, 510. 6 hrs. lab. <513L-Fall, 514L offered on demand>

***515. Seminar.** (1-3)
Selected topics in nuclear engineering. <Offered upon demand>

***520. Interaction of Radiation and Matter.** (3)
Thompson scattering, elastic collisions, quantum mechanical theories of scatter, ionization of matter by charged particles, radiative collisions, Compton scatter, photoelectric effect and pair production. Prerequisites: 420, Math 312. <Fall>

***526. Radiation Shielding.** (3)
Radiation sources; methods of calculating the attenuation of gamma rays, high energy electrons, and fast neutrons; shielding of reactors, accelerators, and radioactive materials. Prerequisite: 420 or equivalent. <Offered upon demand>

***551-552. Problems.** (1-3 hrs. each semester)
Advanced reading, analysis, design, or research.

***560. Reactor Kinetics and Control.** (3) Long
Reactor kinetics and transient response; reactor and power system transfer functions and stability analysis; reactor and plant control systems and instrumentation. Prerequisites: 511 or 430 and permission of instructor; recommended: EE&CS 431. <Fall>

***570.** [521] **Radiation Effects on Materials.** (3) Horak
Theory of radiation interaction with matter; application to crystalline lattices, fluids, plastics, and elastomers; radiation chemistry and chemical reactions in intense radiation fields; reactor materials and radiation effects on reactor design. Prerequisites: 420, 470 or equivalent. <Spring>

***580.** [580-581] **Plasma Science and Technology.** [Controlled Fusion I & II] (3) Everett
Kinetic theory of nonequilibrium plasmas; transport theory, dissipative mechanisms, waves and oscillations, instabilities, collisionless shocks, and computational methods. <Fall>

***590L. Nuclear Systems Design.** (3) Lucoff
Examination of the main variables in nuclear systems design; nuclear system, heat removal, radiation effects, structure, controls, shields, economics, etc. Design problem. Recommended prerequisites: 461, 511. 1 lecture, 6 hrs. lab. <Fall>

***599. Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

***610. Advanced Reactor Theory. (3)** O'Dell
Development of the theory of reactor systems and description of calculational methods for homogeneous and heterogeneous reactors. Prerequisite: 511. <Offered upon demand>

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ENGINEERING, TECHNOLOGY

The College of Engineering does not offer a program in Engineering Technology. However it cooperates with the Albuquerque Technical-Vocational Institute by offering the special courses listed below. These courses are required as part of the Technical-Vocational Institute program in Civil Engineering Technology.

§170L. Materials Testing Laboratory. (3)
Basic testing methods for aggregates, soils, concrete, bituminous materials, wood, steel, aluminum, and other construction materials. Prerequisite: permission of instructor. 2 lectures, 4 hrs. lab. <Offered upon demand>

§181L. Beginning Plane Surveying. (3)
Theory and practice in the use of surveying equipment and computational techniques needed in elementary leveling, transversing, mapping, and construction layout. Prerequisites: high school trigonometry or equivalent and permission of instructor. 2 lectures, 4 hrs. lab. <Offered upon demand>

§182L. Intermediate Plane Surveying. (3)
Field and office practice in construction surveys with emphasis on highway and route surveys. Prerequisite: 181L. 2 lectures, 4 hrs. lab. <Offered upon demand>

ENGLISH

ASSOCIATE PROFESSOR J. Zavadil (Chairman); PROFESSORS G. W. Arms, E. W. Baughman, E. Buchanan[3], F. M. Dickey, W. D. Jacobs, J. M. Kuntz, K. G. Simons, E. W. Tedlock, Jr.[2], H. Trowbridge[3]; ASSOCIATE PROFESSORS P. B. Davis, R. Fleming, G. Frumkin[1], P. Gallacher, D. Johnson[1], J. Jones, D. McPherson, I. P. Melada[3], R. Pickett, J. Thorson[1], F. B. Warner, M. B. Whidden; ASSISTANT PROFESSORS J. Barbour, L. S. Catlett, S. V. Dewitt, M. Eaves, S. Guthrie, J. Heist, L. Johnson, D. Jones, D. Logan, M. J. Power, D. Remley, R. C. Rich, E. Spolsky, M. Tillotson; VISITING PROFESSOR L. Howard.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

Normally an English major consists of 33 hours above the 199 level. Of these no more than 9 hours may be at the 200 level. At least 9 hours should normally be at the 400 level. Every major will take 250 and will take two courses from the following: 351, 352 or 353, 354. A student may take both Shakespeare courses (352 and 353), but if so he must also take either Chaucer (351) or Milton (354). Every major is strongly urged to take 490. The major, with the help of his adviser, should select a reasonable distribution of courses.

Students in the College of Arts and Sciences who plan to complete an English major and teach English in secondary schools should read carefully the advice on "Certification to Teach in High School" on pp. 182-183 of this catalog.

MINOR STUDY

An English minor requires 18 hours in English courses numbered above 103. At least 6 of these hours must be taken in courses numbered above 301.

§ No credit allowed in College of Engineering.

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

Generally a student must have credit for Engl 102 or its equivalent before registering for a course numbered above 300, and at least one course in literature numbered 250-300 before registering for a literature course numbered 351 and above.

An English major should have 250 to meet the prerequisite for a course numbered above 250-300.

COURSES IN GENERAL LITERATURE FOR GROUP REQUIREMENTS

The following lower division courses are recommended for students who wish to satisfy college group requirements: 270 and 280. Engl 300 is recommended for students who seek upper division credits. The following courses are not accepted as literature courses under group requirements: 220, 221, 222, 292, 303, 320, 321, 322, 421, 422, 436, 440, 441, 445.

Undergraduate Courses

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. <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 Cinema. (3)
(See Film 210.)

220. [261] **Expository Writing. (3)**
An intermediate course with emphasis on rhetorical types, structure, and style. <Fall, Spring>

221. [262] **Creative Writing: Prose Fiction. (3)**
<Fall, Spring>

222. [263] **Creative Writing: Poetry. (3)** <Fall, Spring>

250. The Study of Literature. [Approaches to Literature] **(3)**
Required of all English majors. General introduction to the study of literature, emphasizing problems of literary style, form, content, and genre. Introduction to the ways in which literature can be talked or written about. Papers will be submitted regularly. <Fall, Spring>

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. <Fall, Spring>

280. Readings in Literature. [Studies in Literature] **(3)‡**
Primarily for non-majors. Reading will be organized around themes, ethnic studies, or regional studies. Titles of individual sections will vary as content varies. <Fall, Spring>

285. American Life and Thought. (3)
(See Am St 285.)

292. Introduction to the Study of Language. (3-4)
(See Ling 292.)

300. Studies in Literature. [Studies in Literature: Genre, Theme or Idea, Author, or Group of Authors] **(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. Phonetics.** (3)
(See Sp Com 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. <Offered upon demand>

321. Creative Writing: Short Fiction, Novel. [Advanced Creative Writing: Prose Fiction] (3)‡‡
Intermediate course with generally equal emphasis on writing and reading. Prerequisite: 221 or permission of instructor.

322. Creative Writing: Reading and Writing of Poetry. [Advanced Creative Writing: Poetry] (3)‡‡
Intermediate course with generally equal emphasis on writing and reading. Prerequisite: 222 or permission of instructor.

***335. French Literature in Translation.** (3)
(See Comp L 335.)

***336. German Literature in Translation.** (3)
(See Comp L 336.)

***337. Spanish Literature in Translation.** (3)
(See Comp L 337.)

***338. Russian Literature in Translation.** (3)
(See Comp L 338.)

***339. Greek Drama in Translation.** (3)
(See Comp L 339.)

***340. Latin Literature in Translation.** (3)
(See Comp L 340.)

***341. Greek Mythology.** (3)
(See Comp L 341.)

351. Chaucer. [Chaucer: The Canterbury Tales] (3)
<Fall, Spring>

352. [441] **Shakespeare: Histories and Comedies.** (3)
<Fall, Spring>

353. [442] **Shakespeare: Tragedies.** (3)
<Summer, Fall, Spring>

354. [446] **Milton.** (3)
<Fall, Spring>

360. [490] **Individual Authors.** [Special Studies in Literature] (3)
Study of a single author or of two or more authors. Titles of individual sections will vary as content varies. <Fall, Spring>

375. [275] **World Literature from Homer to Dante.** (3)
Masterpieces of European and Asiatic literature, including the Bible. <Fall>

376. [276] **World Literature from Rabelais to Mann.** (3)
Masterpieces of European literature. <Spring>

400. [438] **Literary Movements.** [Literary Movements since 1940] (3)‡
(Also offered as Comp L 400.) Studies of major ideas, works, and figures that form a literary movement. Titles of individual sections will vary as content varies. <Fall, Spring>

410. [466; 491] **Literary Criticism.** [Literary Criticism; Special Studies in Literary Criticism] (3)
(Also offered as Comp L 410.) Study of the major critical attitudes toward literature or intensive study of selected individual critics or critical approaches. Prerequisite: 6 hrs. in literature. <Fall, Spring>

***415. Old English.** (3)
Elementary grammar, translations of prose and poetry, exclusive of Beowulf. <Fall>

***416. Beowulf.** (3)
Prerequisite: 415 or permission of instructor. <Spring>

‡‡ May be repeated once for credit.

***421. Creative Writing: Workshop in Prose Fiction.** (3)‡‡
Advanced workshop devoted primarily to student writing. Prerequisites: 221, 321, or permission of instructor. <Fall, Spring>

***422. Creative Writing: Workshop in Poetry.** (3)‡‡
Advanced workshop devoted primarily to student writing. Prerequisites: 222, 322, or permission of instructor. <Fall, Spring>

436. The Teaching of English. (3)
(See Sec Ed 436.)

***440.** [492] **Introduction to Linguistics.** (3)
<Fall>

***441.** [494] **English Grammars.** (3)
Prerequisite: 440 or its equivalent. <Spring>

***445.** [403] **History of the English Language.** (3)
Etymology, morphology, phonetics, and semantics of English; relation between linguistics and cultural change. <Fall, Spring>

***450.** [253] **Survey of Earlier English Literature.** [Key Works in English Literature, Early] (3)
From Old English to 1700. Broad comprehensive study of the principal literary and intellectual movements, and selected writers and literary works from **Beowulf** through Dryden. <Fall>

***451.** [254] **Survey of Later English Literature.** [Key Works in English Literature, Later] (3)
From 1700 to present. Broad comprehensive study of principal literary and intellectual movements, and selected writers and literary works. <Spring>

452. [454; 456] **The Middle Ages.** [Middle English Literature; Literature of Medieval Europe] (3)‡‡
(Also offered as Comp L 452.) Study of a single author, a group of authors, or themes and movements in literature of Middle Ages, or survey of period or part of period. Titles of individual sections will vary as content varies. <Spring>

453. [448; 457] ***The English Renaissance.*** [Elizabethan Drama exclusive of Shakespeare; Elizabethan Poetry and Prose] (3)‡‡
Study of a single author, a group of authors, or themes and movements in literature of English Renaissance, or survey of period or part of period. Titles of individual sections will vary as content varies. <Fall, Spring>

454. [444] **Seventeenth Century English Literature.** [The Early Seventeenth Century] (3)‡‡
Study of a single author, a group of authors, or themes and movements in English literature of seventeenth century, or survey of period or part of period. Titles of individual sections will vary as content varies. <Fall, Spring>

455. [445; 473; 474] **Restoration and Eighteenth Century Literature.** [The Later Seventeenth Century, Exclusive of Milton; Age of Swift and Pope, 1700-1744; Age of Johnson, 1744-1798] (3)‡‡
Study of a single author, a group of authors, or themes and movements in English literature of Restoration and eighteenth century, or survey of period or part of period. Titles of individual sections will vary as content varies. <Fall, Spring>

456. [478] **English Romanticism.** [The Romantic Period] (3)
Study of a single author, a group of authors, or themes and movements in English Romantic literature, or survey of period or part of period. Titles of individual sections will vary as content varies. <Fall>

457. [481; 482] **Victorian Literature.** [Victorian Poets; Victorian Prose] (3)
Study of a single author, a group of authors, or themes and movements in Victorian literature, or survey of period or part of period. Titles of individual sections will vary as content varies. <Spring>

458. [432; 435; 437] **Modern British Literature.** [Contemporary Poetry; Contemporary Fiction; Contemporary Drama] (3)
Study of a single author, a group of authors, or themes and movements in modern British literature, or survey of period or part of period. Titles of individual sections will vary as content varies. <Fall, Spring>

459. Irish Literature. (3)
(Also offered as Comp L 459.) Study of a single author, a group of authors, or themes and movements in Irish literature, or survey of Irish literature or some portion of Irish literature. Titles of individual sections will vary as content varies. <Fall, Spring>

‡‡ May be repeated once for credit.

***460.** [467] **Colonial and Revolutionary American Literature.** [Colonial and Revolutionary Period in American Literature] **(3)**
Study of a single author, a group of authors, or themes and movements in American literature of the Colonial and Revolutionary periods, or survey of periods or part of periods. Titles of individual sections will vary as content varies. <Fall>

461. [468] **American Romanticism.** [The Romantic Period in American Literature] **(3)**
Study of a single author, a group of authors, or themes and movements in American Romantic literature, or survey of period or part of period. Titles of individual sections will vary as content varies. <Fall, Spring>

462. [469] **American Realism.** [The Period of Realism in American Literature] **(3)**
Study of a single author, a group of authors, or themes and movements in American literature of the later nineteenth century or survey of part of period. Titles of individual sections will vary as content varies. <Fall, Spring>

463. [432; 435; 437] **Modern American Literature.** [Contemporary Poetry; Contemporary Fiction; Contemporary Drama] **(3)**
Study of a single author, a group of authors, or themes and movements in modern American literature, or survey of period. Titles of individual sections will vary as content varies. <Fall, Spring>

***464.** [470] **American Humor. (3)**
American humorists from 1830 to present. <Spring>

470. [432; 435; 437] **Contemporary Literature.** [Contemporary Poetry, Contemporary Fiction, Contemporary Drama] **(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. (3)**
(See Comp L 475.)

***480. Philosophy and Literature. (3)**
(See Eng-Ph 480.)

***481.** [461] **The Folktale in English. (3)**
(Also offered as Comp L 481.) 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. [The Eighteenth Century Novel, Defoe to Austen] **(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. [The Victorian Novel; Scott to Hardy] **(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.

487. [462; 465] **Studies in Genre: Comedy, Epic, Satire, Tragedy, etc.** [The Epic; Tragedy] **(3)**‡
(Also offered as Comp L 487.) 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. [490] **Interdisciplinary Studies.** [Special Studies in Literature] **(3)**
Literature studied in connection with some other discipline. Titles of individual sections will vary as content varies. <Fall, Spring>

490. [498; 499] **Senior Colloquium.** [Honors Study] **(3)**
Course for majors. Examination of most important ideas about literature encountered by student in previous studies. Emphasis on bringing together critical techniques and ideas, and applying them to literary problems. <Fall, Spring>

497. Individual Study. (1-3 hrs. per semester to maximum of 6)

Graduate Courses

***500. Introduction to the Professional Study of English.** [Introduction to Graduate Study] **(3)**
Introduction to materials and methods for scholarly study of literature and professional writing. 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.)

‡‡ May be repeated once for credit.

***510. Criticism.** [Critical Approaches to Literature] **(3)**
Survey of history of criticism; or study of any school of criticism, any critic, group of critics, or critical approach. <Fall>

***513.** [500] **The Middle Ages.** [Introduction to Graduate Study] **(3)**
Any selection of literature of Middle Ages. Emphasis or approach to be chosen by instructor. <Fall>

***523.** [500] **The Renaissance.** [Introduction to Graduate Study] **(3)**
Any selection of literature of Renaissance. Emphasis or approach to be chosen by instructor. <Fall, Spring>

***527. Studies in Rhetoric for Teachers. (3)**
(Also offered as Sec Ed 527.) Examination of variety of approaches to teaching of writing. <Spring>

***528. Studies in Reading and Literature for Teachers. (3)**
(Also offered as Sec Ed 528.) Applications of knowledge of reading process to teaching of literature. <Summer only>

***533.** [500] **The Seventeenth Century.** [Introduction to Graduate Study] **(3)**
Any selection of literature of seventeenth century. Emphasis or approach to be chosen by instructor. <Fall>

***537. Teaching Composition. (2)**
Required of all first-year graduate assistants and of teaching assistants. Problems in teaching reading and writing of expository prose. <Fall>

***538. Teaching Introductory Literature. (2)**
Required of all second-year graduate assistants. Problems in teaching literature and critical writing. <Fall>

***551. Problems for the Master's Degree. (1-3 hrs. per semester)**

***553.** [500] **The Nineteenth Century.** [Introduction to Graduate Study] **(3)‡**
Any selection of literature of nineteenth century. Emphasis or approach to be chosen by instructor. Repeatable once, but only if content is Romantic for one three hours of credit and Victorian for other three hours. <Fall, Spring>

***555. Seminar in Linguistics and Language Pedagogy. (1-3)**
(See Ling 555.)

***560.** [500] **American Literature.** [Introduction to Graduate Study] **(3)‡**
Any selection of American literature. Emphasis or approach to be chosen by instructor. <Fall, Spring>

***563.** [500] **The Twentieth Century.** [Introduction to Graduate Study] **(3)**
Any selection of literature of twentieth century. Emphasis or approach to be chosen by instructor. <Spring>

***573. Language. (3)**
Advanced study of language as one means of interpreting literature. <Fall>

***575. Problems and Methods of Literary Study. (3)**
Illustration and analysis of scholarly and critical methods, as applied to selected literary works. <Spring>

***580. Special Topics: History of Ideas, Literary Movements, etc. (3)‡**
Any topic that cuts across periods, genres, or disciplines. <Fall>

***587. Genre: Comedy, Epic, Satire, Tragedy, etc. (3)‡**

***590. Colloquium. (4)‡**
Exploration of selected subjects by lecture, discussion, and frequent student reports. <Fall, Spring>

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***600.** [603; 606] **Studies in American Literature.** [Studies in the Literature of Colonial and Revolutionary America (1600-1800); Studies in 19th Century American Literature] **(4)‡**

***610. Studies in Criticism.** [Seminar in Literary Criticism] **(4)‡**

***620.** [619; 623; 625; 633; 643; 660] **Studies in British Literature.** [Studies in Middle-English Literature (1100-1500); Studies in the English Renaissance (1500-1616); Studies in the 17th Century; Studies in the 18th Century; Studies in the 19th Century; Studies in Contemporary Literature] **(4)‡**

***630. [673] Studies in Language.** [Language Seminar] (4)
Phonology of English Speech, linguistic structure, American dialect and regional vocabulary, related subjects.

***640. [675] Special Studies: Types, Backgrounds, Forces.** [Types, Backgrounds, and Forces] (4)‡
Genres, history of ideas, or other subjects to be designated by instructor.

***651. Problems for the Doctor's Degree. (1-3 hrs. per semester)**

***699. Dissertation. (3-9 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 Professor David Johnson, who is the adviser for all students in the program.

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) English-Philosophy 480.

MINOR STUDY

Not offered.

***480. Philosophy and Literature.** (3) English and Philosophy Staffs
Selected philosophical movements and their relationship 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)

***414. Experimental Music Theatre. (1-4)‡** Phillips
The content and form of this course will vary each time it is offered. Group improvisation, movement, voice training, acting technique, and technical production; normally culminating in a public performance. <Spring>

490. Interdepartmental Proseminar. (3)‡
Open to juniors and seniors with the requisite grade-point average. See p. 247 for specific requirements. <Fall>

FRENCH

See Modern and Classical Languages.

GENERAL STUDIES

A limited number of hours of credit in courses in General Honors and in the Undergraduate Seminar Program can be counted towards appropriate Group Requirements of the College of Arts and Sciences or towards general graduation requirements in other colleges. Application to apply such credit should be made in the office of the dean of the college from which the student plans to graduate.

THE GENERAL HONORS PROGRAM

With the exception of Gen St 102 which is open to all freshmen, these General Honors courses are designed for students enrolled in the General Honors program. This program is not to be confused with the Departmental Honors program described on p. 168 of the catalog.

Specific information about General Studies and the General Honors Program is given on p. 166. For more details go to the office of the Director of the General Honors Program.

Explanation of footnotes not indicated will be found on p. 296.

101-102. Freshman Reading Seminar. (3, 3) Bottome, Howarth
Broad, general reading and class discussion for freshmen with senior General Honors students acting as instructors and discussion leaders under faculty direction. <Fall, Spring>

302. Honors Seminar. [Major Traditions in Western Culture. Part I: The Greeks to 1600] (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.

399. Individual Study. (1-3)†

401. Honors Seminar [Major Traditions in Western Culture. Part II: Seventeenth Century to the Present] (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.

402. Senior Honors Colloquium. [Great Issues (Senior Honors Colloquium)] (3)††
Selected issues for class discussion and as subjects of individual projects. Required of all candidates for graduation with Honors in General Studies.

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. 155.

331-332. [301-302] **Seminars in the General Area of the Humanities.** (1, 1)‡
Various sections, various topics each semester.

333-334. [303-304] **Seminars in the General Area of the Sciences.** (1, 1)‡
Various sections, various topics each semester.

335-336. [305-306] **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 (Chairman)[1], I. Bennett, R. D. Campbell, R. E. Snead; ASSISTANT PROFESSORS E. M. Barrett, D. A. Dyreson

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

A total of 36 hours in Geography, plus Geology 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, 381, 475.
Regional Geography—3 hours selected from courses numbered 301 to 336.

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 Chairman 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.

Environmental Systems:
Recommended courses in Geography:
261, 361, 373, 405, 471, 472.
Recommended distributed minor:
Anth 361; Arch 101; B&AS 306; Econ 200, 201, 340; Math 162, 163; Phil 356-7; Soc 101.

Geomorphology:
Recommended courses in Geography:
373, 405, 483.
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, 476.
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, 472.
Recommended distributed minor:
Anth 361; Arch 161, 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 479 and 481 are accepted as non-laboratory sciences in fulfillment of the Science (Group V) requirement of the College of Arts and Sciences; all other Geography courses except 380L are accepted toward fulfillment of the Social Science (Group IV) requirement in that College.

I. INTRODUCTORY COURSES

101. General Geography. (3)
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. General Geography. (3)
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 their interaction with the physical earth. <Summer, Fall, Spring>

261. Spatial Organization. (3) Dyreson
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. <Fall>

263. Economic Resources. (3)
A systematic survey of world economic geography with emphasis on the resources of arable land, energy sources, and basic minerals and on the primary crop and manufacturing region. <Fall>

II. REGIONAL COURSES

Each of the following regional courses involves a description, analysis, and synthesis in spatial association of the physical and human attributes of particular parts of the earth. These attributes include climates, vegetation types, soils, landforms, population, demographic factors, ethnic groups, economic circumstances, and political arrangements. The synthesis of these physical and cultural phenomena is used as the basis for characterizing individual regions and subregions.

***301. South America.** (3) Barrett
Regional geography of South America. <Fall>

***302. Middle America.** (3) Barrett
Regional geography of Mexico, Central America, and the West Indies. <Spring>

***303. North America.** (3)
Regional geography of the United States and Canada. <Spring 1974 and alternate years>

***304. Southwestern United States.** (3) Dyreson
Impact of man, past, present, and potential, on the southwestern United States viewed as a geographical ecosystem. <Fall 1972 and alternate years>

***330. Southeastern Asia.** (3) Bennett
Regional geography of southeastern Asia including the area from Burma and North Viet Nam southeastward through Malaysia, Indonesia and the Philippines. <Offered upon demand>

***331. Eastern Asia.** (3)
Regional geography of China, Korea, and Japan. <Offered upon demand>

***332. Western Europe.** (3) Murphy
Regional geography of Europe from the Atlantic eastward through Finland, Germany, Austria, and Italy. <Fall 1973 and alternate years>

***333. The Soviet Union and Eastern Europe.** (3)
Regional geography of the U.S.S.R. and of eastern Europe from Poland southward through Czechoslovakia, Hungary and the Balkans. <Fall 1974 and alternate years>

***336. The Middle East and the Indian Subcontinent.** (3) Snead
Regional geography of southwestern and south central Asia from Turkey through India and southward through the Suez, Arabia, and Ceylon. <Spring 1974 and alternate years>

III. UPPER-LEVEL SYSTEMATIC COURSES, PROBLEMS, AND SEMINARS

***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 the 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 1974 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 1973 and alternate years>

***361. Quantitative Methods in Geography.** (3) Dyreson
Use of probability theory and descriptive statistics in geographic applications, models, and theories. Prerequisite: College algebra. <Fall>

***365. Urban Geography.** (3) Dyreson
Urbanization as a spatial process. Evolution of the city through time. Types of cities, internal and external spatial relationships of cities and city systems. <Spring>

***373. Map Reading and Air Photo Interpretation.** (3) Snead
Techniques of analysis of maps and aerial photographs for geographic study and research. Prerequisite 101. <Fall 1973 and alternate years>

380L. Cartography. (3) Huzarski
(See CE 380L.) Open to Geography majors and minors. <Spring>

***381. Political Geography.** (3) Murphy
Study of political areas of the world from a spatial point of view, including problems of size, population, boundaries, location, productivity, ethnic grouping, and political power. <Spring>

***391. Arid Lands.** (3) Dyreson
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>

***401. Geographic Writings and Analysis.** (3)
Examination of the work of some principal geographers with emphasis on developments, trends and methodology. Limited to majors and minors in geography. <Offered upon demand>

***405. Field Methods.** (3) Bennett, Snead
Training in field mapping and other field techniques used in geography, with particular emphasis on studies of land utilization, physiography, urban geography, and microclimatology. The Albuquerque vicinity is used as a case study area, and classes meet frequently in the field. <Fall>

****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>

***462. Advanced Quantitative Methods in Geography.** (3) Dyreson
Non-stochastic mathematical techniques and spatial statistics for the analysis of locational structure. Prerequisite: 361 or permission of instructor. <Spring>.

***471. Environmental Systems.** (3) Campbell
A survey of the most significant interfaces of environment with the various aspects of human life. A broad analysis of the functional characteristics of the human eco-system, including the interaction of man and environment, psycho-social mechanisms and environmental design. <Fall 1972 and alternate years>

***472. Environmental Systems—Applications.** (3) Campbell
The analysis of various environmental systems in terms of their human behavioral outputs; redesign as an element of system improvement; system evaluation and design implementation. <Spring 1973 and alternate years>

***475. 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 1973 and alternate years>

***476. Regional Psychological Geography.** (3) Campbell
Geography of personality and national character; defining personality, national character, culture; the role of environment; personality and national character regions. <Spring 1976 and alternate years>

***479. Environmental Conservation.** (3) Dittmer
(See Biol 479.) Open to Geography majors and minors. <Summer, Spring>

***481. Geomorphology.** (3) Snead
(Also offered as Geol 481.) Origin, development, and classification of land forms, with detailed consideration of gradation processes. Open to Geography majors and minors who have completed Geol 101. <Spring 1973 and alternate years. Taught as Geol 481 each alternate year>

***483. Physical Geography of North America.** (3) Snead
Detailed study of the development of the surface landforms and associated physical phenomena of North America with special emphasis on soils, vegetation, and Pleistocene climatic influences. Prerequisite: 481 or permission of instructor. <Spring 1973 and alternate years>

491-492. Problems. (1-3 hrs. each semester)
Supervised individual study and field work. <Summer, Fall, Spring>

***501. Seminar in the History and Philosophy of Geography.** (3) Campbell
The development of geography as a field of study from the ancient to the modern world. Analysis and discussion of various points of view which have arisen from time to time in regard to content and research. An examination of the purposes and achievements of geographical inquiry. <Fall>

***511. Seminar in Physical Geography.** (3)‡ Bennett, Snead
Specific topics in physical geography. Research techniques and new developments. <Fall>

***512. Seminar in Human Geography.** (3)‡ Barrett, Campbell, Murphy
Specific topics in human geography. Research techniques and new developments. <Spring>

***521. Seminar in Regional Geography** (3)‡
Regional analysis and synthesis as applied to specific areas of the earth. <Spring 1974 and alternate years>

***551-552. Problems.** (2-3 hrs. each semester)
Supervised individual study for graduate students.

***575. Seminar in Psychological Geography.** (3) Campbell
<Spring 1973 and alternate years>

***599. Master's Thesis.** (1-6 hrs. per semester)

GEOLOGY

ASSOCIATE PROFESSOR L. A. Woodward (Chairman); PROFESSORS R. Y. Anderson, D. G. Brookins, W. E. Elston, J. P. Fitzsimmons, Klaus Keil (Director, Institute of Meteoritics), A. Rosenzweig, S. A. Wengerd; EMERITI PROFESSORS V. C. Kelley, S. A. Northrop; ASSOCIATE PROFESSORS E. F. Cruft, A. M. Kudo; ASSISTANT PROFESSORS G. R. Clark, J. R. Jiracek,

C. T. Siemers; FACULTY ASSOCIATES W. E. Hale, K. F. Mather, R. T. Zbur; SENIOR RESEARCH ASSOCIATE Martin Prinz, Institute of Meteoritics.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

For the degree of Bachelor of Arts: Geol 101, 105L, 301L, 302L, 307L, 311L or 441L, 319L, 401, and 7 additional hours in geology courses numbered above 300; Chem 101L, 102L, Math 162, 163, and Phsycs 160, 161.

A student may obtain a distributed minor with the above program of study upon completion of 6 hours of courses 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, 311L or 441L, 319L, 401, 420L, 421L and 422L, Chem 101L, 102L, 311, 312, Math 162, 163, 264, 265, Physcs 160, 161, 262, Psych 201, and EE&CS 336.

Students wishing to specialize in related fields such as paleontology may make substitutions in their program with the approval of the department chairman.

Students completing the above program will have a distributed minor.

DEPARTMENTAL HONORS

Students seeking Honors in Geology should consult with the department chairman 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, and 4 additional hours in courses numbered above 100, and 12 additional hours in courses numbered above 300, except that no more than 2 hours of 401 (Seminar) may be credited toward the minor.

MINOR STUDY IN PALEOECOLOGY

See p. 473.

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) Anderson, Clark, Wengerd
History of the earth; rise and succession of the various forms of life. Prerequisite: 101. <Summer, Fall, Spring>

103. Earth Resources and Man. (3) Elston
Geologic occurrences of fuels and minerals and their influence on domestic and world affairs. Prerequisite: 101. <Spring>

104. Life on Earth. (3) Clark, Siemers
Origin and evolution of life and some aspects of paleoecology. Prerequisite: 101. <Fall, Spring>

105L. Physical Geology Laboratory. (1)
Minerals, rocks, and topographic maps; occasional field trips. Credit suspended when credit in 101 is not earned. Corequisite 101. 3 hrs. lab. <Summer, Fall, Spring>

106L. Historical Geology Laboratory. (1)
Fossils and paleogeographic maps; emphasis on the historical geology of New Mexico. Credit suspended when credit in 102 is not earned. Corequisite 102. 2 hrs. lab. <Summer, Fall, Spring>

107L. Earth Resources and Man Laboratory. (1)
Ore specimens, exploration and utilization techniques; occasional field trips. Corequisite: 103. 2 hrs. lab. <Spring>

108L. Life on Earth Laboratory. (1)
Fossils and sedimentary rocks; field trips. Prerequisite: 105L; corequisite: 104. 2 hrs. lab. <Fall, Spring>

209. The Earth Environment. (3) Anderson
(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>

****301L.** [201L] **Mineralogy. (4)** Rosenzweig
Elementary crystallography; fundamentals of chemical and physical mineralogy; elements of mineral identification. Prerequisite: 105L; pre- or corequisite: Chem 101L. 2 lectures, 6 hrs. lab. <Fall>

****302L. Petrology. (3)** Elston, Fitzsimmons, Kudo
Classification, hand-specimen identification, occurrence, and origin of rocks. Prerequisite: 301L; pre- or corequisite: Chem 102L. 2 lectures, 3 hrs. lab. <Spring>

****307L. Structural Geology. (4)** Woodward
Nature and origin of rock structures and deformations; map and stereographic problems. Prerequisites: 106L, Math 162. 3 lectures, 3 hrs. lab. <Spring>

****319L. Field Geology and Reports. (4)** Siemers, Woodward
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>

***401. Seminar. (1)†‡**
Current topics in geology. Prerequisites: 302L, 307L. <Fall, Spring>

***404L.** [304L] **Determinative Mineralogy. (3)** Cruft, Rosenzweig
Classification of minerals; mineral associations; methods of mineral identification; laboratory study of minerals and mineral suites. Prerequisites: 302L, Chem 102L. 1 lecture, 6 hrs. lab. <Spring>

***410L. Fundamentals of Geochemistry. (3)** Brookins, Kudo
Surface and near-surface chemical reactions in igneous, metamorphic, and sedimentary rocks. Cyclic processes and kinetics. Geochemical methodology. Prerequisite: 302L. 2 lectures, 3 hrs. lab. <Fall>

***411L.** [311L] **Invertebrate Paleontology. (4)** Clark
General principles and familiarization with diagnostic features of fossils. Introduction to environmental implications. Prerequisite: 105L. 2 lectures, 6 hrs. lab. <Spring>

***420L. Advanced Field Geology. (3)** Kudo, Siemers, Woodward
Geological mapping; special field problems. Prerequisite: 319L. 1 full day in field each 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)** Elston, 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.** [426] **Exploration Geophysics.** [Fundamentals of 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)** Clark
Laboratory methods for the preparation of fossils for study and illustration. Includes techniques essential to related subjects such as palynology and chemical paleontology. Prerequisite: 311L 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.** [Sedimentology] (4) Siemers
Origin, dispersion, deposition, diagenesis, classifiation, and general distribution of sedimentary materials; principles of physical stratigraphy and biostratigraphy. Prerequisite: 302L. 3 lectures, 3 hrs. lab. <Fall>

***442. Petroleum Geology.** (3) Wengerd
An 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 1973 and alternate years>

***455L. Air Photogrammetry and Photogeology.** (3) Wengerd
Photogrammetric computations; stereoscopy; preparation of planimetric, topographic, and photogeologic maps. Prerequisites: 105L, Math 162, or permission of instructor. 1 lecture, 6 hrs. lab. <Fall 1974 and alternate years>

***462L. Hydrogeology.** (3) Hale, Wengerd
Occurrence and development of water with special emphasis on the Southwest. Prerequisites: 105L and senior standing. 2 lectures, 3 hrs. lab. <Spring 1974 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.

***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.

***471L.** [471] **Mineral Deposits.** [Metallic Mineral Deposits] (4) Elston
Origin, classification, occurrence, and exploration of mineral deposits. Prerequisites: 302L, 307L. 3 lectures, 3 hrs. lab. <Fall>

***481. Geomorphology.** (3) Wengerd
(Also offered as Geog 481.) Origin, development, and classification of land forms, with detailed consideration of gradation processes. Prerequisites: 307L, or 105L and permission of instructor. <Fall 1973 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. <Fall 1973 and alternate years>

***487L. Morphological Crystallography.** (3) Rosenzweig
The 32 point groups; crystal form and habit; crystal projections; crystal measurement and drawing. Prerequisite: Math 264. 2 lectures, 3 hrs. lab. <Fall 1972 and alternate years>

***490. Geologic Presentation.** (1)
Student reviews of geologic literature and critique. **Strongly recommended for all geology majors.** Prerequisite: senior standing. <Fall, Spring>

491-492. Problems. (2, 2)

495. Senior Thesis. (3)†
Prerequisite: candidacy for Honors in Geology. <Offered upon demand>

***501L. Sedimentary Geochemistry.** (3) Cruft
Physical chemistry of aqueous solutions at low temperature. Evolution of the atmosphere and hydrosphere. Chemical oceanography; geochemistry of chemical and biogenic sediments. Pre- or corequisite 302L. 2 lectures, 3 hrs. lab. <Fall 1972 and alternate years>

***502L. High-temperature Geochemistry.** (3) Kudo
Applications of thermodynamics to metamorphic and igneous rock formation. Introduction to experimental petrology. Pre- or corequisites: 302L or 422L, Chem 311-312. 2 lectures, 3 hrs. lab. <Spring 1973 and alternate years>

***504L. Isotope Geochemistry I.** [Isotope Geochemistry] (3) Brookins
Radioactive decay with applications to geologic problems; rigorous discussion of U, Th-Pb; K-Ar; and Rb-Sr systematics plus Pb and Sr isotopy.

***505L. Isotope Geochemistry II.** (3) Brookins
Age determinations by the radiation damage and C-14 methods. Theory and applications of stable isotope fractionation with rigorous treatment of H, B, C, N, O, and S systems. Nuclide production in extraterrestrial matter. Prerequisite: 504L or consent of instructor. <Spring>

***506L. X-ray Crystallography.** (4) Rosenzweig
(Also offered as Chem 523L.) Principles of X-ray diffraction, Debye-Scherrer, Weissenberg, and precession methods. Space group symmetry and its determination. Prerequisites: Math 264 or 311, and permission of instructor. 2 lectures, 6 hrs. lab. <Fall 1973 and alternate years>

***507L. Crystal Structure Analysis.** (3) Rosenzweig
(Also offered as Chem 524L.) Structure factor calculations; Fourier methods; the Patterson function; examples of complete structure analysis. Prerequisites: 506L and permission of instructor. EE&CS 336 is strongly recommended. 2 lectures, 3 hrs. lab. <Spring 1974 and alternate years>

***510.** [472] **Advanced Mineral Deposits.** [Nonmetallic Mineral Deposits] (3) Elston
Ore genesis, tectonic setting, and structure of metallic ore deposits, exploration techniques. Prerequisite: 471L. <Spring 1973 and alternate years>

***512L. Petrography of Opaque Ores.** (3) Keil
Determination and paragenesis of minerals in polished sections. Prerequisites: 421L, 471L. 1 lecture, 6 hrs. lab. <Spring 1973 and alternate years>

***513L. Meteoritics and Cosmochemistry.** [Meteoritics] (3) Keil
Origin, classification, and composition of meteorites and returned lunar samples. Origin of solar system and planets. Prerequisite: 422L or permission of instructor. 2 lectures, 3 hrs. lab. <Spring 1974 and alternate years>

***517L. Instrumental Methods in Geochemistry.** (2-4)†‡ Cruft, Keil, Rosenzweig
Study of selected major instrumental techniques in current use in geochemistry. 1 or 2 lectures, 3 or 6 hrs. lab. <Spring>

***518L. Microprobe Analysis.** (3) Keil
Theory, instrumentation, and application of electron, laser, and ion beam microprobe techniques; quantitative analysis of geological materials. Prerequisite: permission of instructor. 2 lectures, 3 hrs. lab. <Fall>

***519L. Selected Topics in Geochemistry.** (2-4)‡ Cruft, Kudo
A detailed analysis of selected current topics, primarily but not exclusively, using a geochemical approach. <Spring>

***520. Selected Topics in Geobiology.** (3)†‡ Clark
Discussion of current and classic research in geobiology. Prerequisite: permission of instructor. <Spring>

***521L. Metamorphic Petrology.** (3) Fitzsimmons
Recrystallization and metasomatism in the transformation of solid rock masses and the structural modifications attending them. Prerequisite: 422L. 2 lectures, 3 hrs. lab. <Spring>

***525L. Advanced Structural Geology.** (3) Woodward
Description and analysis of major structural types; map studies and problems. Prerequisite: 307L. 2 lectures, 3 hrs. lab. <Fall>

***528. Regional Tectonics.** (3) Woodward
Principles of regional structural synthesis and analysis. <Spring 1974 and alternate years>

***531L. Igneous Petrology.** (4) Kudo
Genesis of magmatic rocks; eruptive mechanisms; tectonic setting and differentiation trends of igneous rocks in continental, oceanic, orogenic, and nonorogenic environments. Prequisites: 421L and 422L or 302L. 3 lectures, 3 hrs. lab. <Fall>

***537L. Stratigraphic Analysis.** (3) Wengerd
Quantification of stratal variations on regional bases utilizing statistical approaches to thickness, sediment content, inherent sedimentary structure, and fluid distribution in sedimentary rocks. Prerequisites: 441L. 2 lectures, 3 hrs. lab. <Fall 1973 and alternate years>

***539. Environmental Reconstruction. (3)** Anderson
(Also offered as Paleoe 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>

***542L. Subsurface Geology. (3)** Wengerd
Well-logging and correlation techniques; study of cuttings, drilling-time logs, electric logs, radioactivity logs, and insoluble-residue logs; construction of subsurface-contours, isopach, and isopleth maps, and detailed cross-sections. Pre- or corequisite: 442 or 462L. 1 lecture, 6 hrs. lab. <Offered upon demand>

***544L. Sedimentary Petrology.** [Advanced Sedimentology] **(4)** Siemers
Sedimentary materials in thin section with emphasis on depositional environments, sedimentary processes, diagenesis and lithification. Prerequisite: 422L. 2 lectures, 6 hrs. lab. <Spring 1973 and alternate years>

***547-548. Seminar. (2, 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. (3-9 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 F. W. Iklé (Chairman), D. C. Cutter, W. M. Dabney, E. Lieuwen, G. D. Nash, G. E. Rothenberg, R. W. Shugg (part-time), G. W. Smith[2]; ASSOCIATE PROFESSORS R. N. Ellis[2], T. S. Floyd, D. E. Skabelund; ASSISTANT PROFESSORS R. Berthold, P. Brewer, C. Herbold, R. Kern, J. Porter, N. Pugach, R. Robbins, J. Roebuck, K. Seitz, R. Slenes, J. Spidle, C. Steen, D. D. Sullivan, F. M. Szasz; INSTRUCTOR H. Rabinowitz; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

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.

PERIOD MINOR

For requirements, see Comparative Literature.

DISTRIBUTED MINOR FOR HISTORY MAJORS

A major may offer an American Studies minor as well as a minor in a single department. For requirements, see American Studies.

DEPARTMENTAL HONORS

The Department of History has an Honors program which a student may enter on 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.

100. The Making of the Modern World. (3)
This course will deal in a global context with the historical roots and the relevance of the great issues facing man today, such as nationalism, colonialism, imperialism, Marxism, and its various offshoots—Maoism and Castroism, industrial and military technology, urbanization, and the question of race and ethnic minorities. <Fall>

101-102. Western Civilization. (3, 3) Berthold, Robbins, Roebuck, Rothenberg, Seitz, Skabelund, Spidle, Sullivan.
101—Ancient times to 1648; 102—1648 to present. Each section of course will focus on a particular approach in history. Titles of individual sections will vary as content varies. <Summer, Fall, Spring>

161-162. History of the United States. (3, 3) Brewer, Dabney, Nash, Pugach, Rabinowitz, Smith, Szasz
Survey of the economic, political, intellectual, and social development of the United States, including the place of the US in world affairs, (161) from 1607 to 1865; (162) from 1865 to the present. <Summer, Fall, Spring>

251-252. Eastern Civilizations. (3, 3) Iklé, Porter
251—The development of the traditional societies of India, Southeast Asia, China, and Japan until the 16th century; 252—The impact of western colonialism and imperialism on Asia, nationalism, and modern Asian states. <251—Fall; 252—Spring>

§**260. History of New Mexico.** (3)
Survey from Cabeza de Vaca to 1912. <Fall, Spring>

281. History of Colonial Latin America. [History of Latin America] (3) Floyd, Slenes
From 1492-1821. <Fall>

282. History of Latin America. (3) Herbold, 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; it is an examination of his history and his culture.

284. Afro-American History. (3) Becknell
(Also offered as Ed Fdn 284.) Survey of Afro-American history beginning with Africa and continuing to contemporary Black America.

§ Offered only at the Los Alamos Residence Center.

***300. The Great Transition: 20th Century America.** (3) Nash
A one semester topical survey of major changes in American life during the 20th century. Not open to history majors. Available to history minors and any student interested in the major forces that shaped contemporary America such as the technological, economic, social, ethnic, urban, cultural, and political revolution. <Spring>

301-302. Interdepartmental Studies in the Culture of the United States. (3, 3)
(See Am St 301-302.) May be taken for departmental credit only with the consent of the chairman. <Fall, Spring>

***303. History of World Communism.** (3) Robbins
From Marx to the present. <Spring>

***305. History of Science to 1687.** (3) Skabelund
Evolution of scientific ideas and the role of science in the formation of Western civilization from antiquity to the Newtonian synthesis. <Fall>

***306. History of Science since 1687.** (3) Skabelund
Development of scientific thought from the Newtonian synthesis to the present. <Spring>

309. Historiography. (3) Kern, Seitz, Spidle
Development of historical thought and writing. <Summer, Fall, Spring>

***311. Ancient Civilizations of the Near East.** (3) Berthold
Prerequisite: 101. <Spring>

***313. Greece.** (3) Berthold
A survey of developments in Greek civilization from early times to the reign of Justinian. Prerequisite: 101. <Spring>

***314. Rome.** (3) Berthold
Survey of the rise, decline, and fall of Roman power from the Italian expansion to the establishment of the successor states. Prerequisite: 101. <Fall>

***321. Early Middle Ages, 300 to 1050.** (3) Sullivan
Prerequisite: 101. <Fall>

***322. High Middle Ages, 1050 to 1300.** (3) Sullivan
Prerequisite: 101. <Spring>

***323. Renaissance Era, 1300 to 1520.** (3) Sullivan
Prerequisite: 101. <Fall>

***325. The Reformation, 1500 to 1648.** (3) Sullivan
Prerequisite: 102. <Spring>

***332. Early Modern Europe, 1648 to 1763.** (3) Steen
Europe under the Old Regimes. Prerequisite: 102. <Fall>

***333. French Revolution and Napoleon.** (3) Steen
Prerequisite: 102. <Spring>

***335. Modern Europe, 1815 to 1914.** (3) Kern
Restorations and revolutions; national unification and industrialism; the "generation of materialism" and the origins of the first World War. 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) Rothenberg
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 considerations of American Jewish community, modern anti-semitism, and rise of the state of Israel. <Spring>

***338.** [372] **The City in History.** [History of Urban Development] (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>

***339. Military History of Europe to 1790.** (3) Rothenberg <Fall>

***340. Military History of Europe since 1790.** (3) Rothenberg <Spring>

***341. France.** (3) Steen
From 1500 to the present. <Fall>

***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>

***347. Old Russia from the 9th to the 17th 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 1860's to the fall of Khrushchev. Emphasis on political and social changes. <Fall>

***350. Traditional China.** (3) Porter
From the beginnings to the Manchu conquest, 1644. <Fall>

***351. Modern China.** (3) Porter
From 1644 to the present. <Spring>

***352. History of Japan.** (3) Iklé
Social, political, and economic institutions from historical beginnings to modern times. <Spring>

***354. The Far East in the Contemporary World.** (3) Iklé
Emphasis upon diplomatic relations between Asia and the West. <Fall>

***356. History of the Near East.** (3) Iklé
From ancient Mesopotamia to the present. <Fall>

***357. History of Africa since 1800.** (3) Roebuck, Spidle
Survey of the African continent during colonial and national periods. <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.** (2) Rabinowitz, Shugg <Spring>

***364. Political History of the United States.** (3) Smith
From 1789 to the present. <Spring>

366. From Slavery to Freedom in Urban America. (3) Rabinowitz
<Spring>

***367. The Federal Republic, 1789 to 1829.** (3) Brewer <Fall>

***368. The Federal Republic, 1829 to 1860.** (3) Brewer <Spring>

***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 17th century to the 1890's. <Fall>

***374. The Trans-Mississippi West.** (3) Ellis <Spring>

***375. Military History of the United States.** (3) Rothenberg, Smith
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. (3)** Cutter
Spanish exploration and occupation of the Southwest; colonial government and missions. <Fall>

***384. Inter-American Relations. (3)** Floyd, Herbold, 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>

***393. Spanish South America to 1820. (3)** Floyd
Emphasis on Peru and on economic, social, and cultural aspects. <Spring>

***395. Iberian History to 1700. (3)** Kern
Spanish and Portuguese history to 1700. <Fall>

***396. Iberian History since 1700. (3)** Kern
Spanish and Portuguese history since 1700. <Spring>

***397. Mexico to 1821. (3)** Cutter, Floyd
Prerequisite: 281. <Fall>

***398. Mexico since 1821. (3)** Floyd, Lieuwen
Prerequisite: 282. <Spring>

***405. Social History of Science and Technology. (3)** Skabelund
The wider roles of science and technology in Western history. <Spring>

***428. European Intellectual History, 1762 to 1870. (3)** Seitz
The Enlightenment synthesis; its culmination and decline; the romantic era; liberalism and positivism; Darwin and Marx. <Fall>

***429. European Intellectual History, 1870 to the Present. (3)** Seitz
Science and religion in the post-Darwinian generation; the anti-positivist reaction; the age of anxiety from Spengler to Sartre. <Spring>

***438. European Diplomatic History. (3)** Rothenberg, Spidle
Since 1815. Prerequisite: 102. <Fall>

***442. Germany. (3)** Rothenberg
From 1815 to present. Prerequisite: 102. <Fall>

***443. The Habsburg Empire, 1790-1918. (3)** Rothenberg
History of the Multinational Empire with special emphasis on political affairs and rise of nationalism. <Spring>

***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.** [The American Revolution and the Federal Republic, 1763 to 1820] **(3)** Dabney

***465. The Era of Sectional Conflict, 1820 to 1860. (3)** Smith
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)** Smith
Political, social, economic, military, and diplomatic history of the period 1860-1865. Prerequisite: 161. <Fall>

***467. Reconstruction and the New Nationalism, 1863-1898. (3)** Smith
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. Intellectual and Social History of the United States, 1607 to 1860. (3)** Szasz <Fall>

*476. **Intellectual and Social History of the United States since 1860.** (3) Szasz <Spring>

*482. **The Mexican Revolution.** (2-3) Lieuwen
Emphasis upon theory and interpretation. 3 hrs. cr. with term paper. <Spring>

*483. **20th Century Social Revolutions in Latin America.** [Modern and Contemporary Latin America] (2-3) Lieuwen
3 hrs. cr. with term paper.

*484. **The Cuban Revolution, 1959 to Present.** (3) Slenes
Background to revolution since 1898; emphasis on period since 1959. <Spring>

*485. **Intellectual History of Latin America.** (3) Herbold <Spring>

*486. **Southern South America.** (3) Slenes
Argentina, Chile, and Uruguay since 1810. Prerequisite: 282. <Spring>

*487. **The Caribbean.** (3)
The Caribbean cultural area from the colonial period. <Spring>

*488. **The Andean Republics.** (3) Herbold
Peru, Bolivia, and Ecuador since 1810. Prerequisite: 282 and reading of the Spanish language. <Fall>

*489. **Brazil to 1822.** [History of Brazil] (3) Floyd
From 1500. Prerequisite: 281. <Fall>

*490. **Brazil since 1822.** (3) Slenes
Prerequisite: 282. <Spring>

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.

Departmental requirements provide that the following seminars may be repeated only once:

*500. **Seminar in Historical Research Methods.** (2) Nash, Porter, Szasz <Fall, Spring>

*501. **Interdepartmental Seminar in the Culture of the United States.** (3)
(See Am St 501.)

*504. **Seminar in Ibero-American Studies.** (3)‡ Floyd, Herbold, Herron, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Ib-Am, Port, and Span 504.) History, literature, and institutions of Latin America.) <Fall, Spring>

*520. **Seminar and Studies in Ancient History.** (3) Berthold <Spring>

*521. **Seminar and Studies in Medieval History.** (3) Sullivan <Fall>

*532. **Seminar and Studies in Early Modern European History.** (3) Steen <Fall>

*540. **Seminar and Studies in European Intellectual History.** (3) Seitz <Fall>

*542. **Seminar and Studies in Modern European History.** (3) Rothenberg <Spring>

*545. **Seminar and Studies in British History.** (3) Roebuck <Spring>

*547. **Seminar and Studies in Modern Russian History.** (3) Robbins
Emphasizes the period 1861-1917. <Spring>

*548. **Seminar and Studies in Iberian History.** (3) Kern

549. **History Education. (3) Zepper
(Also offered as Sec Ed 549) Contemporary problems and trends in history teaching, combining the perspectives of the historian and the educationalist. Emphasis on the modes of historical inquiry in relation to learning theory and teaching strategies. <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>

*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
Intensive study of bibliography, research in source materials, and the writing of original papers on the period of the Civil War and Reconstruction. <Spring>

***568. Seminar and Studies in Recent American History.** (3) Nash
Topical investigation in American history since 1900. <Spring>

***569. Seminar in the Military History of World War II.** (3) Shugg <Fall>

***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) Floyd <Fall>

***582. Seminar in Recent Latin American History.** (3) Lieuwen
The national period of Latin America. <Fall, Spring>

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler, Schwerin
(Also offered as Anth, Econ, Ib-Am, Lat Am, Pol Sc, and Soc 584.) <Spring>

***589. Seminar and Studies in Brazilian History.** (3) Slenes <Fall>

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***699. Dissertation. (3-9 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, Director.

Explanation of footnotes not indicated will be found on p. 296.

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)‡ Dolkart, Floyd, Herron, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Hist, Port, and Span 504.) History, literature, and institutions of Latin America. <Fall, Spring>

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3)‡ Lieuwen, Merkx, Needler, Schwerin
(See Anth, Econ, Hist, Lat Am, Pol Sc, and Soc 584.) <Spring>

***651-652. Problems. (1-3 hrs. each semester)**

***699. Dissertation. (3-9 hrs. per semester)** Cutter, Dolkart, Floyd, Herron, T. Holzapfel, Lieuwen, Nason, Tomlins, Ulibarri
See the **Graduate School Bulletin** for total credit requirements.

INDUSTRIAL EDUCATION

See Education, Secondary.

INSTITUTIONAL PHARMACY

See Pharmacy.

ITALIAN

See Modern and Classical Languages.

JOURNALISM

PROFESSORS A. G. Hillerman (Chairman); L. L. Jermain; ASSOCIATE PROFESSOR J. Hightower; ASSISTANT PROFESSORS J. P. Crow, G. M. Hunsley; LECTURERS R. Lawrence, J. Rittenhouse, R. Pfaff, E. McCrossen, L. Arquette.

MAJOR STUDY

Advertising-Management Sequence: 33 hours including 251, 252, 277, 311, 312, 322, 401, 469, and Sp Com 315 and 411.

News-Editorial Sequence: 30 hours including 251, 252, 301, 311, 312, 322, 475, and 494.

Television-Radio Sequence: 33 hours including 251, 252, 301, 311, 322, 440, 475, and 494, and Sp Com 251, 265, and 465.

MINOR STUDY

18 hours including Journ 251 and 252.

100. Introduction to Mass Communication. (3)
The meaning of mass media in society, with emphasis on their processes and effects. <Fall, Spring>

251. News Writing and Reporting. (3)
Emphasis on news elements, writing techniques and story structure. 2 lectures, 2 hrs. lab. <Fall, Spring>

252. News Writing and Reporting. (3)
Emphasis on reporting methods and advanced writing for the media. Prerequisite: 251. 2 lectures, 2 hrs. lab. <Fall, Spring>

253. Newspaper Practice. (1)
Open to staff members of **The Lobo. May be taken three times.** <Fall, Spring>

261. News Photography. (3)
Training in the use of the camera, and in the taking, developing, and printing of pictures for media use, together with some study of desk preparation of photographs for the photoengraving process. Prerequisite: permission of instructor. 1 lecture, 4 hrs. lab. <Fall, Spring>

277. Graphic Design. (3)
(Also offered as Art 277.) Graphic design in communication. Prerequisite: Art 123. <Fall>

301. History of Journalism in the United States. (3) Jermain
American newspaper and magazine history from the early Colonial periodicals through the present-day streamlined mass-production newspaper. Prerequisite: permission of instructor. <Fall>

302. Editorial and Special Writing. (3) Hillerman
Writing of the editorial essay, the column, and other interpretive matter. Prerequisite: 252 and permission of instructor. <Spring>

311. Copy-Editing and Makeup. (3) Crow, Jermain
Practice in the assembling and editing of news copy, in headline writing, and in page makeup. Prerequisites: 251, 252 and permission of instructor. 2 lectures, 2 hrs. lab. <Fall, Spring>

312. Copy-Editing and Makeup. (3) Crow, Jermain
Continuation of 311, with emphasis on wire copy, typography and newspaper analysis. Prerequisite: 311 and permission of instructor. 2 lectures, 2 hrs. lab. <Fall, Spring>

322. Law of the Press. (3) Jermain
Lectures, discussions, and case histories in the law of libel and the Constitutional guarantees, and in laws relating to contempt and injunction proceedings and other checks of law upon the press. Prerequisite: permission of instructor. <Spring>

332. Writing the Magazine Article. (3)
Writing non-fiction for publication. Prerequisite: permission of instructor. <Fall>

388. Cinematic Photography. (3)
(See Art 388.)

399. Practicum in Journalism. (3)
Supervised internship with a medium of mass communications. Prerequisite: 252 and permission of instructor. <Summer, Fall, Spring>

401. Advertising. (3)
Theory, strategy and techniques of advertising and advertising campaigns. Prerequisite: permission of instructor. 2 lectures, 2 hrs. lab. <Spring>

440. News Programming. (3)
Oral and visual news presentation, multi-channel communication problems, melding text with recordings and text with film, with emphasis on originating and producing radio and television news broadcasts and documentaries. Prerequisites: 252 and permission of instructor. 2 lectures, 2 hrs. lab. <Fall, 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 over-all 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. <Spring>

475. Advanced Reporting. (3) Hillerman
Interpretive coverage of matters of public concern. Prerequisite: permission of instructor. <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>

495. The Mass Media as a Social Force in Latin America. (3) <Spring>

499. Undergraduate Seminar. (3)
An exposure in depth to contemporary problems in communications. Prerequisite: senior standing and permission of instructor. <Offered upon demand>

LATIN

See Modern and Classical Languages.

LATIN AMERICAN STUDIES

PROFESSOR M. C. Needler, Director

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

Language and literature (25 hours): Span 292, 301, 302, 357, 358; Port 275, 276, 277, 278. Social Sciences (27 hours): Hist 281, 282, 384; Geog 301, 302; Pol Sc 355 or 356; Econ 200, 201, 421. Electives (12 hours): These should normally be courses of specifically Latin American content (e.g., Phil 323, Hispanic and Latin American Philosophy, or Soc 365, Urbanization of Latin America), but may also be courses of generalized content with applicability to the Latin American field (e.g., Econ 424, International Economics). The Division makes available prior to the beginning of each semester a list of the electives in Latin American Studies being offered that term. Substitutions can be arranged in the list of required courses, if necessary, to enable the student to attend the University's Quito Center, which the department encourages, or for similar well-grounded academic reasons.

MINOR STUDY

24 hours, including Span 301-302, Hist 281 and 282, Pol Sc 355, Econ 421,

and six 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.

498. Individual Reading and Research. (1-3)
Prerequisite: permission of department chairman. For undergraduates only.

***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, Ib-Am, Pol Sc, and Soc 584.)

***599. Master's Thesis.** (1-6 hrs. per semester)

LAW

PROFESSORS F. Hart (Dean), W. Ellis, D. Hamilton (Visiting), W. Jaeger (Visiting), L. Kanowitz, H. Muir, M. Sharp (Adjunct), F. Trelease (Visiting), A. Utton, J. Walden[4], H. Weihofen; ASSOCIATE PROFESSORS R. Desiderio[4], M. Fink; ASSISTANT PROFESSORS A. Bingaman, C. Daniels (Visiting), J. Goldberg, T. Parnall, R. Walker; H. Geer (Assistant Dean); R. Bennett, Director, Indian Law Center, Lecturer in Law; P. Deloria, Director, Special Scholarship Program in Law for American Indians, Lecturer in Law; T. Grossman, Attorney and Associate in Law, Indian Law Center; G. O'Dowd, Director, Institute of Public Law and Services, Associate in Law; W. MacPherson, Director, Clinical Law Program, Assistant Professor of Law; M. Norwood, Attorney and Associate in Law, Clinical Law Program; Adjunct Clinical Lecturers in Law J. Beckley, E. Curran, W. Gilstrap, D. Jones, B. Keith, J. Martinez, B. Moore, T. Popejoy, C. Reynolds, J. Roach, J. Sutin, D. Wilson; Adjunct Lecturers in Law J. Cooney, C. DuMars, F. Jones, M. Messina, R. Sanchez, G. Shaffer, W. Snead.

Note: Some courses may not be offered in certain years. An offering sheet and class schedule for a particular year may be obtained from the law school.

§**100. Law for Laymen.** (3)
Survey of various areas of law and court procedure; designed especially to introduce Anglo-American system of justice to American Indian.

FIRST YEAR COURSES

#**500. Historical Introduction to the Legal System.** (2)

#**501. Constitutional Law I.** (3)
Nature and scope of judicial review; the federal system; national legislative powers; limitations on governmental power for the protection of persons accused of crime.

#**502. Contracts.** (4)
The law of promises and other utterances. Why society enforces promises. The extent to which promises are enforced by society. The interest that society is protecting by enforcing contracts. The course covers the traditional elements of contract law: contract formation, consideration, breach, conditions, mistake, impossibility, frustration of purpose, etc. Considerable emphasis is placed upon the Uniform Commercial Code.

#**504. Criminal Law.** (3)
Criminal law viewed as a means for the prevention of criminal behavior.

#**505. Law of International Relations.** (2)
A study of the nature and sources of international law and its application to problems relating to international agreements, membership in the international community, nationality, jurisdiction, state responsibility, and force and war.

#**508. Property.** [Property I] (3)
Personal property; "original" ownership; the evolution of interests in real property, briefly treating feudalism and tenure, freehold estates, future interests, and concurrent ownership; leases.

#**510. Torts.** (4)
Tort law examined as a means for compensating harms, discouraging substandard behavior, and allocating losses.

#**513. Introduction to Advocacy I.** (2)

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§ Offered only at the University of New Mexico-Gallup Branch. No credit allowed in School of Law.

Required.

#514. Law as an Instrument of Social Change. (2)
Consideration of law as a force to effect social change by examining the history of racial segregation; how lawyers have been instrumental in effecting social change, with attention given to the judicial and legislative processes.

#533. Family Law. (3)
Marriage, separation, and divorce; economic relations as between husband and wife, parent and child.

575. Programmed Studies I. (2)
Special course in programmed learning of legal concepts, meanings, and analyses.

587. Introduction to Law. (3)
Emphasis on the legislative process.

#611. Introduction to Legislation. (2)

#613. Introduction to Advocacy II. (2)

675. Programmed Studies II. (2)

SECOND AND THIRD YEAR COURSES

Commercial Law

520. Business Associations I. (3)
The fundamental course in business organizations and their operation. Major emphasis will be placed upon the closed corporation and partnerships.

521. Business Associations II. (3)
Financing business associations; introduction to securities regulation; distributions; mergers; sales of assets; consolidation; and amendment of charters and other basic agreements. Major emphasis on publicly owned corporations. Prerequisite: 520.

522. Commercial Transactions I. (3)
Problems of sales, commercial paper, and security interests in personal property.

523. Commercial Transactions II. (2)
Continuation of 522.

528. Creditors' Rights. (3)
Enforcement of judgments, fraudulent conveyances, general assignments, creditors' agreements, bankruptcy, and arrangements.

553. Products Liability. (3)

558. Contracts III. (3)
A study of particular transactions: building contracts, shopping center leases; selling transactions, fraudulent transfers and related matters, procurement contracts.

564. Law and the Consumer. (2)
Material will be selected from the following topics: false advertising, deceptive trade practices, consumer credit, unit pricing, regulations requiring safe products, food and drug regulation, unconscionable contracts, control of television, and public utilities. The course will focus on a select number of sales techniques and other practices that affect the consumer. Students will be required to investigate particular practices, determine whether there is cause to believe that any illegality exists and file complaints with appropriate offices. Emphasis will also be placed upon remedies provided by federal and state agencies and statutes such as the Federal Trade Commission Act, Postal Statutes, and the Federal Truth in Lending Act. Class actions will be considered along with other existent and proposed remedies.

581. Insurance. (3)
The insurance contract.

Procedure

516. Civil Procedure. [Civil Procedure II] **(3)**
An examination of selected topics, including multi-party litigation, the right to a jury trial, former adjudication, and personal and subject matter jurisdiction. A brief survey of the development of legal and equitable remedies. The law governing actions in the federal courts.

517. Trial Practice Workshop. (2)

529. Criminal Procedure. (3)
Administration of the criminal process, including legal control of police practices, and procedure before, during, and after trial in the light of constitutional requirements.

Required.

531. Remedies. (2)
Introduction to the forms of judicial remedies, principles governing their scope and availability, and consideration of grounds for choosing between alternative remedies; includes general principles of damages, restitution and equitable remedies with special emphasis on misappropriation of money, diversion of trade, mistake and injuries to personality.

532. Evidence. (3)
A study of the rules of evidence.

552. Federal Jurisdiction. (3)
Federal judicial power; applicable law in the federal courts; the original jurisdiction of the United States District Court; venue and process; jurisdiction and procedure of the United States Court of Appeals; jurisdiction of the Supreme Court.

561. Arbitration. (3)

563. National Moot Court Competition. (2)

Property and Natural Resources

524. Community Property. (1)
The New Mexico community property system, and its relationship to common law property rights.

547. Water Law. (2)
Western law of surface and ground water with emphasis on New Mexico administrative procedures; the problems of federalism as they affect water rights.

554. Wills and Future Interests. (3)
A detailed study of the legal devices used to provide for successive enjoyment of family property—future interests and powers of appointment—and their characteristic problems. Special emphasis on construction of dispositive provisions in deeds and wills as a prelude to estate planning and drafting.

557. Trusts. (2)
The nature, creation and termination of trusts: the rights of the beneficiary; the duties and liabilities of the fiduciary; problems of trust administration, including charitable trusts.

565. Natural Resources. (3)
A survey of mining and public lands, oil and gas, and water law.

578. Land Transfers and Finance [Real Estate Transactions] (3)

Public Law

515. Employee's Rights. (2)
Workmen's compensation and federal wage and hour legislation.

518. Administrative Law. (3)
The system of legal control exercised by administering agencies other than the courts.

525. Conflict of Laws. (3)
The concepts of domicile and jurisdiction of courts; the effect of foreign judgments; and the law applied to torts, contracts, and status.

526. Constitutional Law II. (3)
State power to regulate and to tax; intergovernmental immunities; limitations on governmental power for the protection of economic and property interests; freedom of expression and association; freedom of religion; equal protection of law.

535. Food and Drug Law. (2)
A study of the Federal Food, Drug, and Cosmetic Act, and of the work of the Federal Trade Commission in connection with false advertising of food, drugs, and cosmetics.

537. Labor Law. (3)
Historical introduction; the negotiation and administration of the collective bargaining agreement; the establishment of the collective bargaining relationship; recourse to economic weapons; the individual and the union.

542. Legal Process. (3)
An examination of the main institutions and processes of the American legal system in the perspective of their everyday working interrelationships. Particular attention is given to legislative jurisdiction and to problems of statutory interpretation.

546. Antitrust Law. (3)
Restraints of trade and monopoly at common law and under the federal antitrust laws, including the Sherman Act, Federal Trade Commission Act, and Clayton Act.

548. Legislation. (2)
Legislative process and roles of participants; the forming of legislative policy and law-making.

556. State and Local Government. [Local Government] **(2)**
Municipal corporations, counties, special units of local government, and problems relating thereto such as organization, procedures in legislative and other functions, responsibility in tort and contract, finance, and relationships with the state and national government.

Taxation

527. Business Planning. (3)
A combination of advanced work in Business Associations and Federal Income Taxation in the context of business planning and counseling. Prerequisites: 520, 534.

530. Estate, Gift, and Inheritance Taxation. (2)
Federal taxation of property transfer, both inter vivos and testamentary. Prerequisite: 534.

534. Federal Income Taxation. (3)
Income taxation of individual and business taxpayers including items of income, deductions, exemptions, credits; the splitting of income among taxpayers; capital gains and losses; tax practice and procedure; accounting and income taxation; and an introduction to partnership trust, and corporate income taxation.

536. State and Local Taxation. (2)

545. Estate Planning. (2)
The criteria for selecting one or another of the available methods of disposition of property, with particular emphasis upon federal income, estate and gift tax consequences. Prerequisites: 530, 534, 554, 557.

551. Corporation Tax. (2)
Federal income taxation of corporations and shareholders, including definition of corporation, organization of corporation, dividend distributions, redemptions, liquidations, and Subchapter S corporations. Prerequisite: 534.

Law and Social Problems (See Seminars also)

555. Jurisprudence. (3)
An examination of various philosophies of law with particular emphasis on the consequences of various theories of the nature of man.

566. Law and the Behavioral Sciences. (3)

570. Law of the Poor. (2)

579. Juvenile Courts and Juvenile Delinquency. (2)

660. Juvenile Law and Practice. (2)

664. Poverty Law. (3)

Professional Skills and Functions

538. Law Journal and Review (Second Year). (1)
(See 568-569)

540. Legal Accounting. (2)
A critical examination of selected issues relating to generally accepted accounting principles and an introduction to corporate financial problems. Emphasis throughout will be laid on the legal contexts in which the lawyer is likely to confront accounting problems.

568-569. Law Journal and Review (Third Year). (2, 1)
Second-year students are selected to compete for positions as student editors. During the course of their second year they must perform assigned editorial tasks and write two case comments of publishable quality. Upon successful completion of this work, they are elected to the editorial board and receive 1 credit hour for their work. As student editors they are assigned greater editorial responsibility under the immediate supervision of the Faculty Editor, and are also required to write one Law Note of publishable quality. Upon successful completion of their editorial duties, they receive an additional 3 hours of ungraded credit.

#572. The Legal Profession. (2)
The lawyer as counselor, advocate, citizen, and public servant, with emphasis on analysis of the nature of his professional responsibilities; contemporary problems of the organized bar.

Required.

585. Practical Skills. (1-3)
588. Practical Problems. (1-3)
596. Clinical Field Work I. (1)
#597. Clinical Field Work III. (3)
640. Applied Problems in Current Litigation. (2)
696. Clinical Field Work II. (1)
#697. Clinical Field Work IV. (3)

Seminars

544. Oil/Gas. (2)
549. Comparative Law. (2)
559. Research. (1)
560. Women and the Law. (2)
562. Special Research. (3)
567. Legal Problems in Community Economic Development. (2)
571. Law and Psychiatry. (2)
574. Mining and Public Lands. (2)
576. Current Legal Problems. (2)
577. Legal Counseling. (2)
580. Law and Control of the Environment. (2)
582. The Corporation and Society. (2)
583. International Legal Problems. (2)
584. Indian Law. (2)
586. Contracts. (2)
590. Commercial Law. (2)
592. Legal Education. (1)
593. Private Law Reform. (2)
594. Individual Research. (1-3)
595. Tax Policy. (2)
650. Pornography and the Law. (2)
690. Law and Medicine. (2)

LIBRARY SCIENCE

See Education, Educational Media.

LINGUISTICS AND LANGUAGE PEDAGOGY

COORDINATING COMMITTEE: ASSOCIATE PROFESSOR B. Spolsky (Anthropology and Elementary Education); PROFESSORS F. Chreist (Speech), M. Zintz (Elementary Education); ASSOCIATE PROFESSORS R. Pickett (English), B. Rigsby[2] (Anthropology); ASSISTANT PROFESSORS G. Bills (Modern and Classical Languages), D. Brodkey[4] (Elementary Education), R. White (Secondary Education); R. Young (Modern and Classical Languages).

The Program in Linguistics and Language Pedagogy coordinates course offerings and degree programs in the field of linguistics. It does not control these courses or programs.

Undergraduates in Arts and Sciences interested in linguistics will usually do best to major in Anthropology, English, Modern Languages, Speech Communication or Communicative Disorders. These departments include within their majors a number of courses in linguistics. By adding a minor in linguistics, a relatively strong concentration can be built up. Undergraduates in Elementary or Secondary Education might choose to minor in linguistics in order to fulfill New

Required.

Mexico State certification requirements for Teachers of English to speakers of other languages.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR OR MINOR IN THE COLLEGE OF EDUCATION

For major or minor program leading to Certification to Teach English to Speakers of other languages and for minor in Teaching Reading in the Secondary Schools, see Department of Secondary Education in College of Education section.

For Composite Minor in Bilingual Education, see Department of Elementary Education in College of Education section.

MINOR IN THE COLLEGE OF ARTS AND SCIENCES

An introduction to linguistics (Ling 292, Anth 354, or Engl 440) and 15 hours selected from the following, although Coordinating Committee may approve others:

Anth 313L, 317L, 359, 405, 418L, 446, 459; Education, C&I 481, 482; Sec Ed 430, 436; Engl 441, 445; French 405, 440; German 405, 445; Span 440, 441, 453, 470; Phil 445; Sp Com 303, 315, 411, Com Ds 430.

292. Introduction to the Study of Language. (3 or 4)
Students who enroll for 4 hours must complete work in weekly discussion group in addition to the 3 hours of lecture. <Fall, Spring>

***555. Seminar in Linguistics and Language Pedagogy. (1-3)‡**
Selected topics. Prerequisite: permission of instructor. <Offered upon demand>

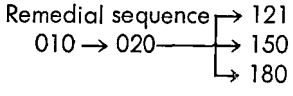
MATHEMATICS AND STATISTICS

PROFESSORS L. Koopmans (Chairman), S. Bell, J. Blum, D. Dubois, B. Epstein, R. Hersh, R. Hildner (Adjunct Professor), A. Hillman, W. Kyner, D. Morrison, M. Mitchell, A. Steger, G. Wing[1]; ASSOCIATE PROFESSORS R. Cogburn, J. Davis, R. Demarr, R. Entringer, E. Gilbert, R. Griego, T. Guinn, S. Kao, J. Lewis, R. Metzler[1], P. Pathak, A. Stone, J. Ulrich, W. Zimmer; ASSISTANT PROFESSORS R. Allen, A. Carasso, H. Davis, G. Efroymson, J. Ellison, A. Gibson, L. Hahn, B. Jones, C. Onneweer, S. Pruess, C. Qualls; INSTRUCTOR R. Grassl; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

For students planning to take mathematics courses at the University, the Department of Mathematics and Statistics recommends that at least two years of algebra and one year of geometry be taken in high school. More advanced courses, in particular trigonometry, would be especially desirable for students who plan to take calculus.

FLOW CHART FOR BEGINNING COURSES



Non-technical mathematics
101

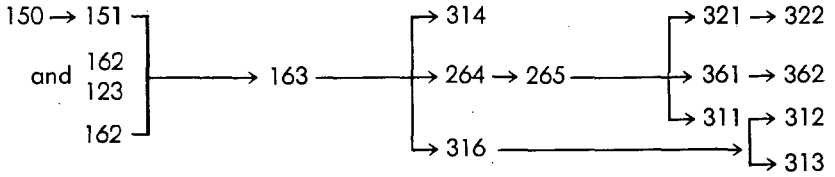
Statistics for social sciences
102

Business sequence
121 → 122

Calculus for social and biological sciences (These courses could be preceded by 121, 150 or 123)

180 → 181

Sequence for students in mathematics, physical sciences or engineering.



Self-graded test and counseling will be available during preregistration for suggested placement in 010, 020, 121, 123, 150, 162 or 180.

MAJOR STUDY

264, 265 and 21 hours in courses numbered above 300, approved by the Mathematics Department. Undergraduates who intend to continue on toward a graduate degree in mathematics are advised to take courses in at least one of the 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.

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 Chairman of the Department 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: EE&CS 203, 206L, 213, 321, 361, plus 2 courses selected from EE&CS 362 and 322, 421, 431.

Minor in Mechanical Engineering: CE 202L, 302, ME 206L, 301, 317, plus 2 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.

MINOR IN COMPUTING SCIENCE

To fulfill the requirements for a minor in Computing Science, the student must take 15 hours credit from the following list of courses: 255, 256, 355, 356, 357, 452, 455, 553, 554, 555, 558, 677. An undergraduate wishing to take courses at

the 500 level and above needs permission from the instructor and the Graduate School. A student may elect a minor or distributed minor in Computing Science with a Mathematics major provided he does not use the same course to satisfy both a major and minor requirement.

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 $25.00 is charged. <Summer, Fall, Spring>

020. Basic Algebra. (0)
Functions, equations, inequalities, graphing and related topics in elementary algebra. Special fee of $25.00 is charged. <Summer, Fall, Spring>

030. Elementary Algebra. (0)
(Offered at Los Alamos Residence Center only) Ten weeks of remedial high school algebra plus six weeks of college algebra.

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 102, Psych 201) An introduction to some of the basic ideas in probability and statistics; analysis of numerical data and descriptive statistics, probability and basic probability models for statistics, sampling and statistical inference, techniques of statistical inference illustrated by examples from a variety of fields; demonstrations of the use of the computer in statistics. Prerequisite: a knowledge of algebra. <Fall, Spring>

§§**121. College Algebra.** [Elementary Mathematics] (3)
Fundamental concepts of algebra, equations and inequalities, graphs and functions, exponential and logarithmic functions, systems of equations and inequalities, polynomials, sequences, and complex numbers. Prerequisite: one year of high school algebra or a grade of C or better in 020. <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: one of 121, 150, 162, or 180. <Fall, Spring>

123. Trigonometry. (1)
Definition of the trigonometric functions, radian and degree measure, graphs, basic trigonometric identities and inverse trigonometric functions. <Summer, Fall, Spring>

130. Algebra and Trigonometry. (3)
(Offered at Los Alamos Residence Center only) Algebra of the basic number system, algebraic and trigonometric functions and applications. Prerequisite: 030 or permission of instructor.

§§**150-151. Algebra, Trigonometry, and Calculus.** (4, 4)
The two semesters cover the same material as Math 162 in a more detailed fashion plus extra work in trigonometry. Assignments in 151 require use of the computing laboratory. <Summer, Fall, Spring>

162. Calculus I. [Introduction to Analysis] (4)
Analytic geometry, functions, limits, continuity, derivatives, and applications. Assignments require the use of the computing laboratory. Prerequisite: adequate score on placement test or permission of department chairman. <Summer, Fall, Spring>

163. Calculus II. [Introduction to Analysis] (4)
Integrals, exponential, logarithmic, and trigonometric functions; techniques of integration; applications. Assignments require the use of the computing laboratory. Prerequisite: grade of C or better in 162 or 151 or permission of department chairman. <Summer, Fall, Spring>

§§ Effective Semester II, 1971-72, credit will not be allowed for both 121 and 150.

180. [180-181] **Calculus for the Social and Biological Sciences I.** [Mathematical Analysis for the Social and Biological Sciences.] (3)
Brief review of algebra, functions, graphs; limits; derivative as a rate of change, applications to maxima, minima and to motion; integral as an antiderivative and as a sum, applications. Prerequisite: two years of high school algebra with B or better or 121. <Fall, Spring>

181. [180-181] **Calculus for the Social and Biological Sciences II.** [Mathematical Analysis for the Social and Biological Sciences] (3)
Integrals; methods of integration; numerical integration; relation between integral and derivative; logarithmic and exponential functions, applications to growth and decay; brief review of trigonometry, trigonometric functions; techniques of integration; L'Hospitals rule; Taylor's series and remainder. Prerequisites: 180 and 123 (123 can be taken simultaneously with 181.)

264. Calculus III. [Calculus with Coordinate Geometry] (4)
Taylor polynomials and error; conics and quadric surfaces; partial derivatives; multiple integrals; instructor may require the use of the computing laboratory. Prerequisite: grade of C or better in 163 or permission of department chairman. <Summer, Fall, Spring>

265. Vector Analysis. [Calculus with Coordinate Geometry] (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; instructor may require the use of computing laboratory. Prerequisite: grade of C or better in 264 or permission of department chairman. <Summer, Fall, Spring>

II. COURSES FOR TEACHERS AND EDUCATION STUDENTS

The following courses are intended primarily for undergraduate and graduate students in the College of Education, for others seeking teaching certification, and for participants in Teacher's Institutes. Other persons may be admitted to these courses by permission of the Department Chairman.

§**111. Mathematics for Elementary School Teachers I.** [Arithmetic for Elementary School Teachers] (3)
The intuitive and logical background of arithmetic; properties of sets; algorithms of arithmetic in base ten and other bases; properties of the integers. Prerequisite: satisfactory score on mathematics placement test. <Summer, Fall, Spring>

§**112. Mathematics for Elementary School Teachers II.** [*Structure of Arithmetic*] (3)
The properties of the rational number system; extension to the irrationals; decimal representation of and operations with real numbers; intuitive geometry and measurement; solution of equations and of inequalities. Prerequisite: 111 or equivalent. <Summer, Fall, Spring>

200. Fundamental Concepts of Mathematics. (3)
Survey of elementary logic, algebra, trigonometry, analytic geometry, and calculus stressing fundamental concepts and applications. <Offered upon demand>

211. Foundations of Elementary Mathematics. (2)
Topics from elementary arithmetic, algebra, and geometry designed for the in-service teacher. <Offered upon demand>

§**213. *Elementary Algebra from a Modern Viewpoint.*** (3)
Algebraic systems; axiomatic approach to the real number system; functions. <Fall>

§**214. Elementary Geometry from a Modern Viewpoint.** (3)
Ideas of intuitive geometry; concepts of informal geometry with attention to precise terminology. <Spring>

¶**300. Vector Geometry.** (3)
A vector treatment of lines, planes, curves, and surfaces. <Offered upon demand>

¶**301. Introductory Analysis I.** (3)
Functions, limits, and derivatives with applications. <Offered upon demand>

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§ Math 213 and 214 may be used in place of Math 111 and 112 to satisfy Elementary Education requirements. See El Ed curriculum, p. 214.

¶ These courses are available for graduate credit for the degree of master of Arts in Secondary Education, Master of Arts in Teaching Mathematics, and Master of Arts in Teaching Science.

¶302. **Introductory Analysis II.** (3)
Definite integrals with applications. Prerequisite: 301. <Offered upon demand>

¶303. **Sequences and Series.** (3)
Convergence and error analysis for sequences and series. Prerequisite: 302. <Offered upon demand>

¶304. **Foundation of Secondary Mathematics.** (3)
Sets, Boolean algebras, applications to logic. <Offered upon demand>

¶305. **History of Mathematics.** (3)
A survey of the history of elementary mathematics. Prerequisite: 265 or equivalent. <Offered upon demand>

¶306. [306-307] **College Geometry.** [Topics in Geometry] (3)
Famous theorems of geometry. Fundamentals of Euclidean geometry. Properties of triangles, quadrangles and circles. Highlights of non-Euclidean geometry. <Offered upon demand>

¶307. [306-307] **Intuitive Topology.** [Topics in Geometry] (3)
Simple closed curves, orientable and non-orientable surfaces, Möbius strip, Klein bottle, homeomorphism. <Offered upon demand>

¶308. **Topics in Higher Algebra.** (3)
Theory of equations and algebraic structures; problem solving techniques. <Offered upon demand>

309. **Introduction to Linear Algebra. (3)
Elementary treatment of matrices for social science students and for secondary teachers; solution of systems of linear equations; linear transformations in the plane; determinants. <Offered upon demand>

¶310. **Applications of Mathematics.** (3)
Applications of elementary mathematics to the physical, biological, and social sciences. Prerequisite: 265 or 309 or equivalents. <Offered upon demand>

III. UPPER LEVEL UNDERGRADUATE COURSES

311. **Engineering Mathematics. (3)
Vector algebra and calculus; ordinary differential equations. Prerequisite: 265. <Summer, Fall, Spring>

312. **Advanced Engineering Mathematics I. (3)
Infinite sequences and series of functions; uniform convergence; Taylor and Fourier expansions with applications to ordinary and partial differential equations; special functions. Prerequisite: 311 or permission of instructor. <Summer, Fall, Spring>

313. **Advanced Engineering Mathematics II. (3)
Theory of functions of a complex variable with applications to physical and engineering problems. Prerequisite: 311 or permission of instructor. <Summer, Fall, 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. Non-mathematics graduate students will be required to complete a term project to receive graduate credit. Prerequisite: 163 and Knowledge of FORTRAN. 264 and CE 102L are recommended. <Fall, Spring>

319-320. **Theory of Numbers. (3, 3)
Divisibility, congruences, primitive roots, quadratic residues, diophantine equations, continued fractions, partitions, number theoretic functions. Prerequisite: elementary algebra. <319-Fall, 320-Spring>

¶ These courses are available for graduate credit for the degree of Master of Arts in Secondary Education, Master of Arts in Teaching Mathematics, and Master of Arts in Teaching Science.

****321. Linear Algebra. (4)**
Linear transformations, matrices. Canonical forms. Spectral theorems in inner product spaces. (Content expanded from 322 as offered before 1970-71). Prerequisite: elementary algebra. <Summer, Fall, Spring>

****322. Abstract Algebra. (3)**
Groups and rings, homomorphisms, permutation groups, quotient structures, ideal theory. Prerequisite: 321 or permission of instructor. (Same content as 321 offered before 1970). <Summer, Fall, Spring>

****331-332. Survey of Geometry. (3, 3)**
Topics from affine, projective, Euclidean, and hyperbolic geometries. <Offered upon demand>

****345-346. Statistical Methodology. (3, 3)**
Brief introduction to probability. Estimation, tests of hypotheses, sampling methods, nonparametric methods, regression, analysis of variance, and applications. Prerequisite: one year of elementary calculus. <345-Summer, Fall, Spring; 346-Spring>

351-352. Undergraduate Honors Seminar. (1-3 hrs. each semester to a maximum of 8)
The use of induction, analogy, generalization, specialization, and other techniques in solving mathematical problems. Prerequisite: permission of instructor. <351-Fall, 352-Spring>

****361-362. Advanced Calculus. (3, 4)**
A rigorous development of the differential and integral calculus of functions of one and several real variables. <361-Fall, 362-Spring>

398. Tutoring Freshman Mathematics. (1-3)
Techniques and experiences in tutoring students in freshman mathematics courses; course limited to undergraduates; students required to attend a briefing seminar each week and to tutor two or more hours per week. Prerequisites: 265 or equivalent and at least 6 hours of 300 level mathematics courses. <Fall, Spring>

***415. Foundations of Mathematics. (3)**
Peano axioms; ordinal and cardinal numbers, axiom of choice. Prerequisite: permission of instructor. <Offered upon demand>

***417. Combinatorial Analysis. (3)**
Permutations, combinations, recurrance relations, generating functions, and enumeration techniques. Prerequisite: permission of instructor. <Offered upon demand>

***418. Graph Theory. (3)**
Trees, connectivity, coverings, planarity, colorability, digraphs. Prerequisite: 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, Stoke's theorem and applications to physics and engineering. <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>

***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 345-346. <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>

***443. Statistical Distributions.** (3)
Univariate and multivariate distributions, moments, moment inequalities, transformations. Characteristic functions, generating functions. Special distributions. The multivariate normal distribution. Distribution of quadratic forms. Distribution of order statistics. Characterizations of distributions including the moment problem. Prerequisite: one term Linear Algebra or permission of instructor. <Fall>

***444. Statistical Inference.** (3)
General concepts of estimation, hypothesis testing and the general statistical decision problem. Minimum risk unbiased, maximum likelihood, Bayes, and minimax estimation; admissibility. The power of tests. Confidence and tolerance intervals. Prerequisite: 443. <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, 346 or permission of instructor. <Offered upon demand>

***446. Sampling Theory and Practice.** (3)
Methods of Sample selection: random and systematic samples, stratified and multi-stage sampling. Allocation principles and use of supplementary information. Sampling and non-sampling error. Design and execution of survey data. Computer utilization and a sampling project. Prerequisite: 346 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, 346 or permission of instructor. <Offered upon demand>

***448. Non-Parametric Methods.** (3)
Statistical problems and their non-parametric solutions. Rank order tests, sign tests, chi-square tests, and Kolmogorov-Smirnov tests. Tolerance intervals and non-parametric estimation. Relative efficiency of non-parametric inference. Prerequisite: 346 or permission of instructor. <Offered upon demand>

***449. Topics in Probability and Statistics.** (3)†

***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>

***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. <473-Fall, 474-Spring>

***475-476. Elements of Numerical Analysis. (3, 3)**
Theory and application of procedures for solving fundamental computational problems in mathematics including systems of linear equations, orthogonalization, interpolation, approximation, definite integrals, roots of nonlinear equations, ordinary differential equations. Prerequisites: Fundamentals of advanced calculus, systems of linear equations, ordinary differential equations. <475-Fall, 476-Spring>

***481. Linear Spaces. (3)**
Linear spaces, normed linear spaces, Hilbert spaces, applications to differential and integral equations. Prerequisite: 361. <Offered upon demand>

***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 Chairman.

IV. COURSES IN COMPUTER SCIENCE

155. Problem Solving with the Computer. (3)
An elementary introduction to computing science. The object of the course is an understanding of the relationship between mathematics, computing, and problem solving. <Fall>

255. Computers and Programming. (3)
The basic structure and language of computers will be examined from the standpoint of the transformation of information which takes place during the execution of programs. While alternative ways of computer organization will be discussed, learning to write programs in Assembler language for the IBM System/360 will be emphasized. Prerequisite: some programming experience. <Fall>

256. Non-Numeric Information Processing. (3)
This is a general introduction to non-numeric computer techniques. The course will examine structural relationships within data and will develop these by exploring these techniques. Topics will include text processing and symbol manipulation, theorem proving, algebraic simplification, game playing, and heuristic problem solving. Prerequisites: 155 and 255 or consent of instructor. <Spring>

***355. Programming Languages and Their Translation. (3)**
A systematic study of programming languages will be made, and the concept of phrase structure grammars will be used to explore the relation between the form and meaning of statements and the structure of programs. In addition to examining several higher-level languages in some detail, the student will write an interpreter for a simple programming language. Prerequisite: ability to write programs in some language, such as FORTRAN. <Fall>

***356. Compiler Construction. (3)**
This course is intended to provide a detailed understanding of the techniques used in the design and implementation of the compiler. In addition to covering the theory of compilation methods, the students will construct a compiler for a moderately complex programming language. Prerequisites: 255 and 355 or equivalent. <Spring>

***357. Operating Systems Principles.** [Systems Programming] **(3)**
Principles of supervisor programs and their interaction with the hardware and the problem programs. In addition to discussing general principles, students will be expected to first understand a simple 2500 byte supervisor and then to modify it as required to protect it against others in the class. Prerequisite: 255 or a good knowledge of 360 Assembler language. <Fall>

***358. Computer Sorting. (3)** Allen
The 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. Specific techniques to be considered are selection sort, sorting by search, sorting by sublists, merge sorting, replacement sorting, tape sort operation, polyphase sort, etc. The course is designed for the student of Computing Science who has acquired a basic knowledge of some programming language. <Fall>

***375. Introduction to Numerical Computing. (3)**
Topics covered will be interpolation, integration, solution of ordinary differential equations, solution of linear and nonlinear equations and, depending on student interest, possibly eigenvalues or computer arithmetic. Instead of surveying methods for each topic, a single effective method will be studied. In most cases computer codes will be

furnished. Methods will be developed thoroughly but the emphasis will be on solving actual problems. Prerequisites: calculus and some ability at FORTRAN programming.

***452. Simulation.** (3) Fitzsimmons
(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)
This course deals with 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. Non-Standard and Higher Order Logic.** (3)
Intutionistic logic and model theory, modal logics, minimal logics, classical theory of types, the Godel incompleteness theorem, Henkin's theory of types. Prerequisite: 455. <Spring>

***457. Principles of Artifically Intelligent Machines.** (3)
Survey of artificial intelligence exclusive of pattern recognition. Heuristic search techniques, game playing, introduction of mechanical theorem proving. Prerequisite: 256; recommended: 455. <Offered upon demand>

***500. Foundations of Set Theory.** (3)
General review of classical logic, Zermelo-Fraenkel axioms, the consistency and independence of the continuum hypothesis, the consistency and independence of the axiom of choice. Prerequisites: 415, 455, 456. <Offered upon demand>

***553. Computer Evaluation of Mathematical Functions.** (3)
Develops the mathematical and computational tools for understanding and evaluating mathematical subroutines such as sin and tan and for devising subroutines for the less commonly available functions. Prerequisites: 475-476 or equivalent with permission of instructor. <Offered upon demand>

***554. Mathematical Theory of Computation.** [Theory of Automata] (3)
Recursive functions, unsolvable problems, recursive invariance, recursive and recursively enumerable sets. Prerequisite: 455. <Offered upon demand>

***555. Data Structures.** (3)
Lists, strings, arrays, tree structures, allocation, collection, multilinked structures, sorting, searching, data management. Prerequisites: EE&CS 435 and 437, or equivalent, with permission of instructor. <Offered upon demand>

***556. Introduction to Information Retrieval.** (3)
Lists, trees, dictionaries, indexing and searching techniques, text processing, privacy of information, retrieval systems. Prerequisites: 256 and 555 or permission of instructor. <Spring>

***557. Computational Mathematics.** (3)†
This course will vary from time to time depending upon demand and staff availability. Topics which may be covered are linear, dynamic, and integer programming, perturbation and asymptotic methods, Monte Carlo methods, computational methods for linear algebra, ordinary differential equations, partial differential equations, approximation theory, quadrature, roots of equations. <Offered upon demand>

***558. Mechanical Theorem Proving.** (3)
This course is an introduction to mechanical theorem proving. Topics include the Hebrand-Gödel theorem, Robinson resolution principle, and the theory of types formulated within Church's Lambda Calculus. Students will be exposed to current research dealing with the computational efficiencies of theorem proving computer program. Prerequisite: Mathematical Logic. <Spring>

***559. Topics in Computing.** (3)††

***677. Pattern Recognition.** [Applications of Mathematics to Computing Science] (3).
The objective of the course is to apply mathematical tools, in particular algebraic tools, to problems in pattern recognition. Topics to be studied are perceptrons and other

pattern recognizers. Mathematical tools to be studied and employed include groups of transformations, geometries, information theory, harmonic analysis, and linear parallel predicates. <Offered upon demand>

V. 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.

***511-512. Analytic Number Theory. (3, 3)**
Prime number theorem, twin primes, Dirichlet's theorem, selected topics. <Offered upon demand>

***513-514. Algebraic Number Theory. (3, 3)**
Arithmetic in number fields, ideals, valuations; class field theory, Prerequisite: 322. <Offered upon demand>

***519. Selected Topics in Number Theory. (3)†**

***521-522. Modern Algebra. (3, 3)**
Topics in groups, rings and fields. Prerequisite: 421. <Offered upon demand>

***523-524. Abelian Groups. (3, 3)**
Structure of Abelian groups and modules over special rings. Homological and duality theorems. Prerequisite: 521. <Offered upon demand>

***525-526. Lattice Theory. (3, 3)**
Distributive, modular and orthomodular lattices, Boolean algebras. Lattice congruences, products and sums of lattices. Selected topics. Prerequisites: 521-522. <Offered upon demand>

***527-528. Theory of Rings. (3, 3)**
Ideal theory of commutative rings. Special types of rings, representation and structure theory. Prerequisites: 521-522. <Offered upon demand>

***529. Selected Topics in Algebra. (3)†**

***531-532. Topology. (3, 3)**
Convergence structures, uniform spaces, characterization theorems, selected topics. <531-Fall, 532-Spring>

***533-534. Algebraic Topology. (3, 3)**
Homology theory, fundamental theorem, cohomology theory, homotopy. <Offered upon demand>

***536. Differential Geometry. (3)**
Introduction to the theory of differential manifolds. <Offered upon demand>

***539. Selected Topics of Geometry and Topology. (3)†**

***541-542. Probability Theory. (3, 3)**
Measure theoretic foundations of probability. Characteristic functions. Independence and zero-one laws. Limit theorems: convergence of series, strong law of large numbers, law of the iterated logarithm, central limit theorems. Conditional expectation, martingales and convergence theorems. Prerequisite: 564. Recommended: 441. <541-Fall, 542-Spring>

***543. Advanced Statistical Inference I. (3)**
Measure theoretic discussion of sufficient statistics. Minimal risk unbiased estimation, efficiency of unbaised estimators, large sample theory. Best asymptotically normal and maximum likelihood estimators. Bayes and minimax estimators. Equivariant estimators and admissibility. Prerequisites: 444, 564; corequisite: 541. <Fall>

***544. Advanced Statistical Inference II. (3)**
The Neyman-Pearson Theory of testing hypotheses: Uniformly most powerful unbiased, invariant tests. Monotone and Bayes procedures in the fixed sample case. Bayes sequential testing and the Wald SPRT. Prerequisite: 543. <Spring>

***545-546. Stochastic Processes. (3, 3)**
Structure theorems, martingales, Markov processes, stationary processes, selected topics. Prerequisites: 541-542. <Offered upon demand>

***547. Statistical Design of Experiments. (3)**
Review of linear models and quadratic forms. Principles of experimental design: randomization, replication, control. Experiments with a single factor, crossed and nested factors. Factorial designs, confounding and fractional factorials. Response surfaces. Incomplete block designs and designs based on finite geometries. Prerequisite: 443 or 445 or permission of instructor. <Offered upon demand>

***549. Selected Topics in Probability and Statistics. (3)†**

***551-552. Problems. (1-3 hrs. each semester)†**

***561-562. Functions of a Complex Variable. (3, 3)**
Analyticity, Cauchy theorem and formulas, Taylor and Laurent series, singularities and residues, conformal mapping, selected topics. <561-Fall, 562-Spring>

***563-564. Functions of a Real Variable, Measure, Integration. (3, 3)**
Functions of one and several real variables, measure theory, integration, function spaces. <563-Fall, 564-Spring>

***565. Harmonic Analysis. (3)**
Fourier analysis on the circle, real line, and on compact and locally compact groups. Prerequisites: 562, 564, 581 (or consent of instructor). <Offered upon demand>

***569. Selected Topics in Analysis. (3)†**

***571-572. Ordinary Differential Equations. (3, 3)**
Existence and uniqueness theorems, linear systems, stability theory, asymptotic integration, topology of integral curves. Prerequisite: 462. <Offered upon demand>

***573-574. Partial Differential Equations. (3, 3)**
Equations of first order, classification of equations and systems, elliptic equations and introduction to potential theory, hyperbolic equations and systems, parabolic equations. Prerequisites: 473-474. <Offered upon demand>

***575. Calculus of Variations. (3)**
Classical theory, Euler-Lagrange equations, conditions for a minimum, Hamilton-Jacobi theory, direct methods, applications. Prerequisites: 473-474. <Offered upon demand>

***576. Approximation Theory. (3)**
Best approximation by polynomials and rational expressions. Linear positive polynomial operators. Degree of approximation. Interpolation. Algorithms. Corequisite: 563. Recommended: 581. <Offered upon demand>

***577-578. Integral Equations. (3, 3)**
Theories and applications of non-singular integral equations—Volterra, Fredholm, Hilbert-Schmidt. Estimation of eigenvalues. Singular value decomposition. Theory of completely continuous operators. Topics such as nonlinear, singular, and dual integral equations. Corequisites: 563, 581. <Offered upon demand>

***579. Selected Topics in Applied Mathematics. (3)†**

***581-582. Functional Analysis. (3, 3)**
Linear transformations on Banach and Hilbert spaces, integral equations, spectral theory, semi-groups of operators, Banach algebras, topics in nonlinear analysis. Prerequisites: 563-564. Recommended: 473-474. <Offered upon demand>

***583. Linear Topological Spaces. (3)**
Locally convex spaces, separation axioms, duality, generalized functions. Prerequisite: 481. <Offered upon demand>

***584. Banach Algebras. (3)**
Representation of commutative and non-commutative Banach algebras, abstract harmonic analysis, spectral decomposition of linear algebras. Prerequisites: 431, 481. Recommended: 531. <Offered upon demand>

***589. Selected Topics in Functional Analysis. (3)†**

***619. Seminar in Number Theory. (1-3)†**

***621-622. Theory of Groups. (3, 3)**
Permutation groups, free groups, Abelian groups, Sylow theorems, solvable, super solvable and nil-potent groups. Prerequisites: 521-522. <Offered upon demand>

***623-624. Multilinear and Homological Algebra. (3, 3)**
Tensor products, tensor and exterior algebras. Derived functors, homological dimension, cohomology theories. Prerequisites: 521-522. <Offered upon demand>

***629. Seminar in Algebra. (1-3)†**

***631-632. Algebraic Geometry. (3, 3)**
General theory of places, algebraic varieties, absolute theory of varieties, products, projections, and correspondence, normal varieties, divisors and linear systems, differential forms. <Offered upon demand>

***639. Seminar in Geometry and Topology. (1-3)†**

***649. Seminar in Probability and Statistics. (1-3)†**

***650. Reading and Research. (1-6)†**

***669. Seminar in Analysis. (1-3)†**

***672. Advanced Numerical Analysis—Eigenvalues. (3)**
Develops modern procedures for solving the eigenvalue problem for symmetric and unsymmetric matrices. The technique of backward error analysis will be extensively employed. Prerequisites: 475-476 and a sound knowledge of the fundamentals of linear algebra. <Offered upon demand>

***673. Advanced Numerical Analysis—Ordinary Differential Equations. (3)**
Develops the theory of one-step, linear multistep and hybrid methods for the solution of ordinary differential equations. Practical stability criteria and techniques for estimating error will also be studied. Prerequisites: 475-476 and 462 or equivalent, with permission of instructor. <Offered upon demand>

***674. Advanced Numerical Analysis—Partial Differential Equations. (3)**
Finite difference approximations to pure initial value problems for systems of linear hyperbolic and parabolic equations and the Kreiss theory. Stability of mixed problems via energy estimates. The Gershgorin treatment of the Dirichlet problem for second order elliptic equations in the plane. Asymptotic formulas for the rate of convergence of iterative methods. Other topics if time permits. 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)**
Detailed study of linear ordinary differential operators and of various classes of linear partial differential operators, using methods of functional analysis. Prerequisite: 481, 473-474 or 573-574. Recommended: 581-582. <Offered upon demand>

***679. Seminar in Applied Mathematics. (1-3)†**

***689. Seminar in Functional Analysis. (1-3)†**

***699. Dissertation. (3-9 hrs. per semester)**
See the Graduate School Bulletin for total credit requirements.

MEDICAL SCIENCES

Anatomy

PROFESSORS A. J. Ladman (Chairman), L. M. Napolitano, G. E. Omer; ASSISTANT PROFESSORS L. S. Demski, S. E. Dietert, R. O. Kelley, E. C. Palmer; INSTRUCTORS W. G. Dail, W. E. Doughty, P. E. Keen; ASSISTANT INSTRUCTOR A. P. Evan.

Biochemistry

PROFESSORS F. N. Le Baron (Chairman), R. B. Loftfield[16]; ASSOCIATE PROFESSORS T. J. Scallen, L. F. Smith; ASSISTANT PROFESSORS A. C. Atencio, P. Reyes, D. L. VanderJagt, G. C. Wild, B. M. Woodfin.

Community Medicine

PROFESSORS R. O. Oseasohn (Chairman), R. C. Doberneck; ASSISTANT PROFESSORS H. B. Brown, B. J. Eberle, R. P. Fischer, C. C. Geil, W. A. Heffron, L. H. Koplik, C. E. Lewis, F. E. Mondragon, S. S. Obenshain, R. A. Reid, W. H. Wiese; INSTRUCTOR J. R. Mortimer; LECTURER M. S. Schwebach; ADJUNCT ASSISTANT PROFESSORS N. L. Quenk, F. J. Wall; ADJUNCT LECTURER L. R. Graben; CLINICAL ASSOCIATES L. J. Gordon, R. L. Masters, R. J. Pendall, W. F. Rosenblatt, B. D. Storrs, B. D. Tempest, S. Tully, E. Wallen.

Medicine

PROFESSORS R. C. Williams (Chairman), O. Appenzeller, R. H. Fitz[18], A. H. Greenhouse, D. H. Law, G. D. Lubash, R. O. Oseasohn, E. R. Simon; ASSOCIATE PROFESSORS W. A. Baxley, R. P. Eaton, W. R. Hardy, A. L. Kisch, J. K. Leach (on sabbatical leave to 6/30/72), D. L. Palmer, E. B. Smith, S. W. Thompson; ASSISTANT PROFESSORS J. Abrams, H. B. Brown, R. J. Cronin, D. J. Klepper, E. L. Klingler, R. P. Messner, G. T. Peake, W. P. Reed, J. H. Saiki, R. S. Watts, W. H. Wiese, N. H. Zeller; INSTRUCTORS J. E. Johnson, J. F. Oser; LECTURER D. R. McKinney; ADJUNCT ASSISTANT PROFESSOR A. Vall-Spinosa; CLINICAL ASSOCIATES J. D. Abrums, R. M. Angle, A. M. Babey, R. L. Barenberg, J. R. Barkoff, D. E. Bedingfeld, C. R. Beeson, G. M. Boyden, E. A. Castiglia, J. K. Conrad, M. J. Conway, J. J. Corcoran, O. S. Cramer, R. E. Cutler, H. A. Danemann, C. H. Dillingham, M. J. Donnellan,

[18] On leave 10/1-12/31/71.
[16] On sabbatical leave 9/1/71-8/31/72.

J. B. Farrell, R. C. Field, R. C. Friedenberg, R. Friedenberg, T. B. Gibbons, N. M. Goldberg, J. E. Goss, F. H. Hanold, D. D. Harville, U. G. Hodgin, R. W. Honsinger, C. von Huene, O. D. Johnson, N. I. Kaminsky, B. A. Kenney, J. C. Kraner, C. M. Kurtz, H. R. Landmann, L. Levin, B. Lowenstein, A. L. Maisel, J. W. McMinn, C. L. Mengis, C. J. Metzler, C. S. Moon, E. M. Mostyn, F. M. Mowry, A. Muggia, V. A. Muscarella, J. R. Norman, P. H. Noth, W. Nye, R. Proper, R. R. Pyle, M. A. Rajaee, A. M. Rembe, R. P. Scott, R. R. Secrest, G. Simson, J. J. Stagnone, D. B. Stewart, R. B. Streeper, R. W. Tatum, P. S. Taulbee, H. V. Terrill, J. W. Warren, C. L. Weed, A. W. Williams, J. L. Wilson, B. M. Wimer, H. B. Woodward; and new appointments to be made.

Microbiology

PROFESSORS L. C. McLaren (Chairman), J. V. Scaletti (on sabbatical leave to 6/30/72), J. A. Ulrich; ASSOCIATE PROFESSOR S. Tokuda; ASSISTANT PROFESSORS T. I. Baker, C. E. Cords; CLINICAL ASSOCIATE D. E. Johnson.

Neurology

PROFESSORS A. H. Greenhouse (Chairman), L. D. Amick, O. Appenzeller, J. M. Rhodes; ASSOCIATE PROFESSORS J. M. Bicknell, L. Garcia-Bunuel, B. Porch, R. Snyder, S. W. Thompson; ASSISTANT PROFESSORS E. M. Barnett, J. A. Lewis, R. N. Pesch; LECTURERS J. M. Carte, L. L. Harris, L. V. Otis, J. A. Stephens; ADJUNCT INSTRUCTOR R. A. Atkinson; CLINICAL ASSOCIATES S. Hollinger, M. Lane, M. Maccario, R. J. Maier, D. F. Seelinger, B. T. Selving.

Obstetrics and Gynecology

PROFESSORS R. A. Munsick (Chairman), H. Vorherr, E. A. Zimmermann; ASSOCIATE PROFESSORS P. A. Henderson, L. L. Morgenstern (effective 9/1/72); ASSISTANT PROFESSOR L. H. Koplik; LECTURER E. T. Boneski; CLINICAL ASSOCIATES J. A. Bennett, M. D. Bivens, C. C. Bollinger, F. Cohn, A. Donovan, C. J. Eaton, R. O. Gathings, R. P. George, R. E. Ghigleri, J. R. Hutchison, W. C. Johns, S. Kranz, W. D. McCarty, E. V. McCaughey, J. Neufeld, J. W. Pearson, R. W. Sauerman, R. V. Seligman, J. S. Shortle, I. A. Silberman, W. R. Thompson, A. H. VanDerhor, H. T. Wadstrom, J. W. Wiggins, P. J. Wiles.

Orthopaedics

PROFESSOR G. E. Omer (Chairman); ASSOCIATE PROFESSORS I. E. Hendryson, L. M. Overton; ASSISTANT PROFESSOR G. G. Rakolta; ADJUNCT ASSISTANT PROFESSOR D. H. Munger; CLINICAL ASSOCIATES S. Adler, E. Altman, J. F. Boyd, H. F. Coffey, G. L. Dixon, L. A. Hurley, I. G. Jordan, N. F. Moon, E. Parnall, R. Rock, R. Schatzman, S. Schultz, J. C. F. Simpson, R. S. Turner, J. K. Weaver.

Pathology

PROFESSORS R. E. Anderson (Chairman), R. S. Stone, J. A. Ulrich; ASSOCIATE PROFESSORS W. C. Black, W. R. Hardy, R. E. Howard (effective 3/1/72), S. W. Jordan, M. Kornfeld, G. M. Troup; ASSISTANT PROFESSORS P. W. Day, C. R. Key, G. W. Long, T. S. McConnell, D. Rothfuss, R. L. Sopher, J. C. Standefer, P. D. Stansifer, S. Weitzner, J. K. Wheeler; LECTURER L. Saxton; ADJUNCT LECTURER J. H. Meadows; CLINICAL ASSOCIATES G. A. Atkinson, H. V. Beighley, S. Benjamin, T. B. Carmany, G. C. Chaney, T. L. Chiffe'le, D. W. Dain, H. D. Ellis, A. G. Engberg, W. Hentel, E. B. Herring, R. K. Jones, A. J. Kalivoda, R. O. McClellan, J. D. Oates, S. V. Savino.

Pediatrics

PROFESSORS E. A. Mortimer (Chairman), R. F. Castle; ASSOCIATE PROFESSORS A. H. Cushing, W. M. Michener, R. D. Snyder; ASSISTANT PROFESSORS W. K. Castle, R. W. Coen, C. C. Geil, P. M. Mershon, S. S. Obenshain, G. T. Peake, R. L. Snyder, D. K. Worden; INSTRUCTORS B. J. Harr, V. M. Henderson, R. A. Klein, J. L. Lockwood, S. E. B. Tully; ADJUNCT ASSISTANT PROFESSORS G. Eisenberg, S. N. Stark; CLINICAL ASSOCIATES R. Baumann, G. W. Brown, J. M. Casebolt, D. J. Davis, P. M. Eicher, J. K. Fisk, R. F. Goddard, F. W. Heaton, L. G. McMurray, W. H. Milburn, M. Nabavi, T. N. Norris, D. C. Pinkerton, D. B. Post, J. S. Saland, L. R. Schwartz, R. G. Sullivan, O. Syme, M. A. Tandysh, R. Tully, J. T. Tyson, W. K. Woodard; VISITING PROFESSOR C. A. Weymuller.

Pharmacology

PROFESSORS (Chairman to be appointed), H. Vorherr; ASSISTANT PROFESSORS E. C. Palmer, C. T. Spalding; ADJUNCT ASSISTANT PROFESSOR J. D. Bartlett; and new appointments to be made.

Physiology

PROFESSOR S. Solomon (Chairman); ASSOCIATE PROFESSOR D. V. Priola; ASSISTANT PROFESSORS K. G. Kastel'a, M. Pollay, A. Ratner, R. Shannon, G. K. Weiss; ADJUNCT ASSISTANT PROFESSOR R. L. Barenberg; and new appointments to be made.

Psychiatry

PROFESSORS R. A. Senescu (Chairman), L. M. Libo; ASSOCIATE PROFESSORS C. R. Fletcher, L. Garcia-Bunuel, J. R. Graham, R. Kellner, J. Levy, B. K. Ruebush, W. W. Winslow; ASSISTANT PROFESSORS J. F. Carlin, H. Diaz, A. Frank, S. I. Glover, C. N. Harris, R. J. McCarthy, L. J. Miller, G. D. Otis, S. R. Perls, A. T. Quenk, L. Romero, T. S. Schuster, R. L. Snyder, J. W. Sterling, D. K. Worden; INSTRUCTORS R. G. Blachly, D. A. Bruzzese, J. G. Buchanan, J. P. Cardillo, J. Hartl, M. A. Hickey, R. T. Kellogg, J. D. Murati, M. L. Pinsince, N. Scott, E. T. Suazo, M. Urdaneta, D. A. West; ADJUNCT ASSISTANT PROFESSOR V. D. Jones; ADJUNCT INSTRUCTORS A. W. Curran, H. L. Freedman; CLINICAL ASSOCIATES T. M. Abel, J. B. Alexander, J. H. Andre, C. W. Archibald, R. Bergman, R. L. Campos, H. M. Collins, W. T. Davis, J. Ellis, M. Gingras, B. K. Graham, A. Hovda, H. Hudson, K. P. Koenig, F. Kotzen, M. E. Landau, E. Leyba, S. S. Libo, W. H. Lyman, I. Lyons, M. D. Muldawer, M. Nordhaus, R. D. Norman, H. Paine, B. Prince, S. Roll, S. Rosenblum, G. Ross, W. B. Ross, J. Schenkel, W. Sears, L. R. Taylor, J. Torrens, I. C. Zyniewicz.

Radiology

PROFESSORS B. G. Brogdon (Chairman), M. M. Kligerman, R. D. Moseley; ASSOCIATE PROFESSORS J. L. Howarth, C. F. Mueller, J. D. Shoop; ASSISTANT PROFESSORS J. E. Antoine, J. E. Barnes, R. E. Keesee, D M. Moody, J. L. Simon, W. D. Stiehm; INSTRUCTOR H. G. Pena; LECTURER G. H. Trovato; ADJUNCT ASSISTANT PROFESSOR H. A. O'Brien; CLINICAL ASSOCIATES J. A. Craig, P. M. Fox, J. R. Galloway, R. M. Henderson, O. Legant, M. Lesser, D. L. Simmons, C. M. Thompson, D. A. Wolfel.

Surgery

PROFESSORS E. T. Peter (Chairman), R. C. Doberneck, W. S. Edwards, M. Pollay; ASSOCIATE PROFESSORS L. H. Banowsky, W. R. Blakeley, J. R. Gay, R. J. Kaplan, L. E. Lamb, J. M. Shuck, D. E. Smith; ASSISTANT PROFESSORS T. A. Borden, R. P. Fischer, R. Fulton (effective 7/1/72), C. E. Lewis, K. M. Nelson, A. W. Talley; CLINICAL ASSOCIATES M. M. Berman, J. H. Birch, C. M. Bovard, J. Bronitsky, M. W. Brown, J. H. Burress, R. R. Castillo, M. L. Clevenger, C. B. Conklin, P. G. Cornish, L. C. Delambre, W. O. Edward, V. T. Floyd, A. H. Follingstad, H. S. Friedman, E. J. Gerety, W. C. Gorman, J. F. Griffin, W. J. Hanratty, F. G. Hesse, E. L. Johnson, W. K. Jones, M. R. Klebanoff, I. Klein, J. Kleinfeld, I. C. S. Knight, W. Knoll, W. J. Langlois, J. J. Lehmann, B. Lerman, S. B. Leslie, W. J. Levy, R. E. MacQuigg, P. U. Martinez, J. D. McCarthy, L. J. Miller, K. Moedl, H. S. Musgrave, H. Navarre, J. A. Newsome, W. E. Nissen, L. Parsons, J. B. Roberts, G. S. Rubin, T. R. Sadock, C. J. Sands, A. G. Simms, R. D. Snyder, R. D. Spensley, C. Taylor, A. C. Tenney, J. N. Wilson, E. H. Wood, J. W. Ydens; VISITING PROFESSOR A. E. Walker; and new appointments to be made.

CLINICAL SCIENCE

504-505. Clinical Science I. (5, 5)
The basis for and methods of evaluating the patient as a human being. (1) Lectures and seminars, (2) practical demonstration and experience in interviewing patients, and (3) physical diagnosis.

520. Clinical Science Makeup Course. (10)
An eight-week summer course for transfer students into the second- and third-year classes covering content of *Clinical Science* I and II. (1) Lectures. (2) Practical demonstration and experience in interviewing patients. (3) Physical diagnosis. (4) Correlative conferences. (5) Ward experience. Prerequisite: one year of medical school study <Summer only>

530-531. Clinical Science II. (5, 5)
Continues to emphasize the development of the student's skills in evaluating the numerous factors which influence human behavior in health and disease. Further experience in history-taking and physical examination, coordinated with study of the disease process as it affects the various organ systems of the body. Prerequisites: 504-505.

540. Medicine Clerkship. (7)
Seven weeks course required of third year students; given at Bernalillo County Medical Center and the Veterans Administration Hospital as principal hospitals; inpatient and outpatient care activities, rounds, conferences, preceptorships.

541. Obstetrics-Gynecology Clerkship. (7)
Seven weeks course required for third year students; given at Bernalillo County Medical Center and Sandia Base Hospitals as principal hospitals; inpatient (including deliveries) and outpatient care activities, rounds, conferences.

542. Pediatric Clerkship. (7)
Seven weeks course required for third year students; given at Bernalillo County Medical Center as principal hospital; inpatient (including newborn nursery) and outpatient care activities, rounds, conferences, preceptorships.

543. Psychiatry Clerkship. (7)
Seven weeks course required for third year students; given at Bernalillo County Mental Health Center as principal hospital; inpatient and outpatient care activities, rounds, conferences.

544. Surgery and Surgical Subspecialties. (14)
Fourteen weeks course required for third year students; given at Bernalillo County Medical Center and Veterans Administration Hospital as principal hospitals; seven weeks divided into rotations in orthopedics, urology, thoracic surgery, and emergency room surgery; inpatient and outpatient care, rounds, conferences, lectures.

570. Neurology-Neurosurgery Clerkship. (6)
Six weeks required course for fourth year students; given at Bernalillo County Medical Center and Veterans Administration Hospital as principal hospitals; includes neurology and neurosurgery; inpatient and outpatient care, rounds, conferences.

571. Clinical Science IV. (12)
Twelve week block required of all students. Student may choose which one or two major clinical areas (medicine, pediatrics, obstetrics-gynecology, psychiatry, surgery, community medicine) he will work. Selection is made after consultation with faculty advisers. Time spent in direct patient care activities. For many students, this experience is analogous to internship. Under supervision major role played in care of and responsibility for patients.

572. Selectives. (12)
An activity in some area of medical science (basic or clinical) which student selects from broad list of courses, programs, or preceptorships in clinical practices situations either in Albuquerque or elsewhere, or spend time in preclinical or clinical support areas. Twelve weeks of selective activity requirement for graduation.

573. Electives. (1 cr. hr. for each week of full-time medically related activity)
Most students have 20 or more weeks available in their third and fourth year for elective activities. Student is free to choose what he is to do. He schedules his vacations during this time. He may pursue activities of the type described under 571 or 572. Students are encouraged to initiate programs either here or at other institutions.

MEDICAL BIOLOGY

500-501. Medical Biology I. (13, 13)
A unified and interdisciplinary study of biological principles basic to medicine; selected pertinent material from Anatomy, Biochemistry, Physiology, Microbiology, Pathology, and Pharmacology; biological organization and function from the molecular through cell, tissue, organ system, and whole organism biology. Lectures and seminars. Prerequisites: Math 162; Chem 101L, 102L, 301, 302, 303L, 304L; Biol 121L, 122L; Physcs 151, 152, 153L, 154L.

502L-503L. Medical Biology I Laboratory. (6, 6)
Laboratory experience designed to illustrate experimentally those biological principles being considered in 500-501. Prerequisites: same as for 500-501.

526-527. Medical Biology II. (11, 11)
A transdisciplinary study of biological principles, basic to the manifestations of disease in human beings; a unified approach utilizing pertinent material from Microbiology, Immunology, Pharamacology, Preventive Medicine, and Pathology; clinical aspects of disease commonly studied in introductory courses in Medicine, Obstetrics and Gynecology, Pediatrics, and Surgery; the interrelationships between altered structure and function are considered at the several levels of biological organization. Lectures and seminars. Prerequisites: 500-501, 502L-503L.

528L-529L. Medical Biology II Laboratory. (6, 6)
Laboratory experience designed to illustrate experimentally those biological principles being considered in 526 and 527. Prerequisites: 500-501, 502L-503L.

MEDICAL SCIENCE

****301. Introductory Physiology for Engineers. (3)**
Course designed to provide rudimentary familiarization with physiological systems for

non-biological 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.

***420. Biochemistry of the Nervous System.** (2) LeBaron, Wild
An intermediate level treatment of biochemical topics especially pertinent to the nervous system. These will include: Metabolism and function of transmitter substances; the basic biochemical processes occurring in nervous tissue; alterations in these processes which are associated with functional activity and with pathological states; and the biochemical bases of the effects of drugs on function of the nervous system. Prerequisite: one year college-level biology and one year college-level chemistry.

***432-433. Microbiology.** (3, 3)
A two-semester sequence, covering the morphology, metabolism, physiology, taxonomy, and ecology of microorganisms; principles of immunology and host-parasite relationships. Specifically designed for beginning graduate students in microbiology but open to others. Prerequisites: general biology and organic chemistry.

***435. Immunochemistry.** (3) Tokuda
Nature of antigens and antibodies; chemical basis of immunologic specificity; qualitative and quantitative aspects of antigen-antibody reactions; hypersensitivity; transplantation and tumor immunity. Prerequisites: Biol 456L and permission of instructor.

***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.

***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. Prerequisites: Med Sc 436 and permission of instructor.

***439L. Medical Mycology.** (3) Ulrich
Classification, structure, function, immunology, host-parasite relationships, isolation and identification of pathogenic actinomycetes, yeast, and fungi. Prerequisite: Biol 454L.

***481. Biological Chemistry.** (3) VanderJagt
(Also offered as Chem 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. Physical chemical problem solving will be emphasized. This course is designed primarily for graduate students in biochemistry and related fields. Prerequisite: Chem 302 or 308. <Fall>

***482. Biological Chemistry.** (3) VanderJagt
(Also offered as Chem 482.) Continuation of 481 with major emphasis on anabolic metabolism and control mechanisms. Prerequisite: 481. <Spring>

***581. Advanced Topics in Biological Chemistry.** (3)†
(Also offered as Chem 581) In depth treatment of one or two topics at an advanced level. Prerequisite: 482. <Offered upon demand>

***588-589.** [598-599] **Advanced Biometry for Research.** (3) Eberle, Wall
Methods and concepts of data analysis and interpretation as applied to actual research problems. Topics will include a review of elementary principles of statistical analyses, sampling procedures for experimental and survey research, linear model analysis as applied to analysis of variance, covariance, regression, and bioassay problems. As time permits and students express interest, additional topics will be chosen from the following: quantal assay, sequential analysis in medical triads, distribution free methods. This course will emphasize problem solving in each student's area of research. Prerequisites: Math 162-163 or 180-181, or permission of instructors.

***590-591. Medical Biology I.** (3-13 hrs. each semester)
Same content as Med Bi 500-501, except that credit is variable and will be arranged with the instructors. Prerequisites: same as for Med Bi 500-501.

***592L-593L. Medical Biology I Laboratory.** (6, 6)
Same content as Med Bi 502L-503L. Prerequisites: same as for Med Bi 500-501.

***594-595. Medical Biology II. (3-11 hrs. each semester)**
Same content as Med Bi 526-527, except that credit is variable and will be arranged with the instructors. Prerequisites: 590-591, 592L-593L.

***596L-597L. Medical Biology II Laboratory. (1-6 hrs. each semester)**
Laboratory experience designed to illustrate experimentally those biological principles being considered in 594-595. Prerequisites: same as for 594-595.

***599. Masters Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***610L. Experimental Cytology. (3-6)** Kelley, Ladman, Leppi, Napolitano
Detailed survey of cellular structure as related to function in a variety of tissues and species. Selected laboratory experience with fixatives and staining methods. Prerequisites: 590-591 or equivalents.

***611L. Fine Structure and Electron Microscopy. (6-12)** Kelley, Ladman, Leppi, Napolitano
A consideration of the ultrastructure of various cells and tissues as revealed by the electron microscope. A systematic examination of all the organelles with particular emphasis on the evolution of current thought of structure as related to function. In the laboratory, theory and instruction in the techniques basic to tissue processing, sectioning and use of the electron microscope. Some practical photographic techniques involved in data recording. Prerequisites: 590-591 and 610L or equivalent and approval of Anatomy Department Chairman.

***612L. Histochemistry and Cytochemistry. (4-6)** Kelley, Ladman, Leppi, Napolitano
An exposition of the theory and practice of methods used to elucidate chemical constituents and activities in cells and tissues. Consideration given to methods used in protein, lipid and carbohydrate localizations. Special emphasis directed towards enzyme localization and modification. Selected topics including radio-autography, differential centrifugation, and in vitro cell systems. In the laboratory, opportunities to have experience in several of these areas will be given. Prerequisites: 590-591 and 610L or equivalent.

***613. History of Anatomy. (1-2)** Ladman
A consideration of past and present workers and their impact on the substance of the Anatomical Discipline.

***618. Seminar in Anatomy. (1)**
Weekly or biweekly discussions of pertinent information in the current literature relative to selected topics in morphology.

***620. Advanced Biochemistry. (4)‡** LeBaron, Loftfield, Scallen, Smith
An exhaustive treatment of one or two broad topics in Biochemistry, the subject being different each year and rotating in a 3- or 4-year cycle. Topics will include: Chemistry and Metabolism of Nucleic Acids and Proteins, Metabolic Control Mechanisms, Chemistry and Metabolism of Macromolecules, Chemistry and Metabolism of Carbohydrates and Complex Polysaccharides. Prerequisites: Chem 311-312 and either Chem 481-482 or Med Sc 590-591.

***621. Biochemistry of Proteins. (3)‡** Loftfield, Smith, Woodfin
In alternate years the structure of proteins or the metabolism of proteins will be covered in depth. The former will cover the physical chemistry and ultrastructure of the protein molecules and determination of amino acid sequences. The alternate course will cover protein biosynthesis and breakdown and the interrelationships of protein synthesis and nucleic acid metabolism. Prerequisites: Chem 311-312 and either Chem 481-482 or Med Sc 590-591.

***622. Biochemistry of Phospholipids. (3)** LeBaron
A detailed discussion of the chemistry and metabolism of phospholipids, their interrelationships with other constituents in macromolecular complexes, their relationships to membranes, and their other possible functions. Prerequisites: Chem 324 or 481-482 or Med Sc 590-591.

***623. Biochemistry of Steroids. (3)** Scallen
(Also offered as Chem 623) Includes such topics as the isolation, proof of structure, chemical synthesis, stereochemistry and absolute configuration of important steriods; biosynthesis and metabolism of cholesterol, andrenal steriods and androgens and estrogens. Prerequisites: Chem 301-302; Chem 324 or 481 or Med Sc 590-591.

***631L. Introduction to Research Techniques in Microbiology.** (2)‡
Methods and techniques employed for research in microbial physiology, genetics, virology and immunology; includes independent literature review, laboratory experimentation, interpretation and expression of data in acceptable science writing form. Prerequisite: approval of Microbiology Department Chairman.

***632. Advanced Microbiology.** (3) Scaletti
Chemical and physical properties of microorganisms; special staining; growth; influence of environment on growth, nutrition, enzymes and metabolism. Prerequisites: biochemistry, general microbiology or equivalent. (Offered in alternate years.)

***633L. Advanced Microbial Physiology and Metabolism.** (4) Scaletti
Advanced treatment of microbial metabolic cycles, enzymes and energy-yielding reactions, electron transport systems in fermentation and oxidative processes; advanced metabolic methods for microbial enzyme studies. Prerequisites: biochemistry, general microbiology or equivalent. (Offered in alternate years.)

***634. Biochemical Genetics.** (2-4)‡ Baker
Advanced treatment of genetics and molecular biology in microbial systems, a student participation course. Limited to 8 students. Prerequisites: Med Sc 590 or biochemistry; Introductory Genetics and Microbiology. (Offered in alternate years.)

***635L. Immunochemistry.** (2-4)‡ Tokuda
Advanced treatment of the nature of antigens and antibodies; chemical basis of immunologic specificity; qualitative and quantitative aspects of antigen-antibody reactions; hypersensitivity; transplantation and tumor immunity. Prerequisites: biochemistry, general microbiology and permission of instructor. (Offered in alternate years.)

***636. Advanced Virology.** (3) Cords, McLaren
Advanced treatment of the biology and biochemistry of bacterial and animal viruses. Prerequisites: biochemistry, immunology, virology or equivalent. (Offered in alternate years.)

***638. Microbiology Seminar.** (1)

***650. Translocations in Biological Systems.** (3)
Survey of mechanisms by which solutes and water move across membranes in biological systems. Theoretical basis of solute movement will first be considered followed by a detailed description of translocation in specific cells and tissues. Prerequisites: 590-591 or Biol 429L, 430L and permission of instructor; pre- or corequisite: Chem 311-312.. <Fall 1973 and alternate years>

***651. Integrative Functions of the Endocrine System.** (3) Ratner
Advanced seminar emphasizing interactions of the endocrine secretions in tissues of sex and reproduction, growth and intermediary metabolism. Prerequisites: 590-591 or equivalent and permission of instructor. <Fall 1973 and alternate years>

***652. Advanced Cardiovascular Physiology.** (3) Priola, Weiss
Treatment of both classical and more recent development of concepts in cardiovascular physiology. Material will be presented in both didactic and seminar form and will cover a wide range from neural control and electrophysiology of the heart to physical characteristics of the terminal vascular bed and capillary exchange mechanisms. Prerequisites: 500-501, 502L-503L, or equivalent. <Fall 1973 and alternate years>

***653. Renal Water and Electrolyte Metabolism.** (4) Solomon and Staff of Physiology
A comprehensive advanced treatment of nephron function followed by a treatment of gross aspects of water and electrolyte metabolism. Prerequisites: 590-591, or Biol 429L, 430L and permission of instructor. <Fall 1973 and alternate years>

***654. Hormonal Control of Sex and Reproduction.** (3) Ratner
An advanced seminar dealing with the physiological processes of fertilization, sexual differentiation and behavior, puberty, reproductive cycles, pregnancy, birth, and lactation. <Fall 1974 and alternate years>

***655. Control Mechanisms in Biological Systems.** (3) Kastella
Application of mathematical and physical theory of control systems to biological regulation. Stress will be placed on discussion of use of control theory in current biological research. Prerequisites: calculus and permission of instructor. <Summer 1974 and alternate years>

***656. Advanced Neurophysiology.** (3) Kastella, Weiss
Treatment of both historical and modern developments in central and peripheral neural mechanisms. Some stress will be placed on receptor and synaptic function. Use of pharmacologic techniques will also be discussed. <Fall 1974 and alternate years>

***657. Special Topics in Physiology.** (3)
Subject matter, to be determined by faculty and students, will generally cover a subject of current interest in the field. Prerequisite: permission of instructor.

***658. Physiological Techniques.** (4)
Exposure to a variety of important techniques used in the modern physiological research laboratory. Theory of operation as well as practical laboratory use of techniques will be stressed. Prerequisite: permission of instructors. <Summer 1973 and alternate years>

***659. Seminar in Physiology.** (2)

***660. Advanced Respiratory Physiology.** (3) Shannon
Study of classical and modern developments in respiratory physiology. Subject matter presented in both didactic and seminar form. Prerequisites: 500-501, 502L-503L or equivalent.

***690. Research in Medical Sciences. (2-6 hrs. per semester to a maximum of 12 hrs.)**

***691. Scientific Writing for Graduate Students.** (1) Ladman
Course designed to assist graduate students in preparing research material for publication in a scientific journal and/or for thesis or dissertation requirements.

***695. Research. (2-6 hrs. per semester to a maximum of 12 hrs.)**

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

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 300 hours of didactic and 700 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 hr. lecture. Prerequisite: acceptance into Medical Laboratory Technician Program.

§101. Medical Laboratory Science I. (6)
Basic theory and practice of urinalysis and serology, 3 hrs. lecture, 9 hrs. lab. Prerequisite: acceptance into Medical Laboratory Technician Program.

§201. Medical Laboratory Science II. (10)
Basic theory and practice of clinical chemistry, hematology and instrumentation. 5 hrs. lecture, 15 hrs. combined student laboratory and hospital laboratory experience. Prerequisite: 101.

§202. Medical Laboratory Science II. (10)
Basic theory and practice of clinical bacteriology, parasitology, and immunohematology. 5 hrs. lecture and 15 hrs. combined student laboratory and hospital laboratory experience. Prerequisite: 201.

§203. [102] **Directed Clinical Application.** (8)
Supervised performance of previously acquired knowledge of Laboratory Technology in departments at affiliated teaching hospitals. 40 hrs. week—12 weeks. Prerequisites: 100, 101, 201, and 202.

§401. Theory and Practice of Medical Technology (Preclinical). (16)
Instruction includes theory and clinical application of accepted diagnostic procedures in

§ Credit limited to students enrolled in Medical Laboratory Sciences Programs.

the following disciplines: hematology, clinical chemistry, medical microbiology, instrumentation, immunohematology, serology, and clinical microscopy. Approximately 350 hours of didactic and 650 hours of laboratory in theory and practice of Medical Technology (July). Prerequisites: acceptable Bachelor's Degree or be a 4th year student enrolled in a program leading to a B.S. in Medical Technology at an accredited college or university; and acceptance into Medical Technology Program.

§402. **Practice in Medical Technology Procedures (Clinical).** (16)
Student is assigned to a rotational schedule in the clinical laboratories of an approved, affiliated teaching hospital. Student will gain practical experience in performing accepted clinical laboratory procedures. In addition, trainee will attend in-service training functions such as lectures, tutorials, and seminars. Approximately 1000 hours of supervised practice and instruction. Prerequisite: successful completion of 401.

COMMUNITY SERVICES

General prerequisite—enrollment in UNM School of Medicine New Careers Program, or **permission of instructor.**

010. **Introduction to Community Services.** (0)
Non-credit course designed to provide basic information regarding the role of the paraprofessional in community services and to prepare students for further college work. Emphasis will be placed on techniques of note-taking, test-taking, and information gathering, utilizing content relating to human services.

040. **Towards Self-Understanding.** (3)
Through participation in a sensitivity type group and utilization of various self-exploration techniques such as writing an autobiography, attitudinal scales, the student will gain a level of self-awareness that should enable him to be more conscious of how he comes across to clients and co-workers.

050, 051, 052. **Field Placement.** (6 hrs. per course)
Weekly seminar and 320 hours per semester of clinical experience in a Community Service agency, such as (a) Juvenile Detention Home, (b) County Public Health Department, (c) Therapeutic School of the Comprehensive Community Mental Health and Mental Retardation Center, etc. Students are supervised by institutional personnel and given assignments that will add to their growth as Community Service Workers. Enrollment limited to participants in UNM School of Medicine New Careers Program.

060, 061, 062. **Advanced Field Placement.** (6 hrs. per course)
320 hours per semester in a Community Service Agency. Weekly seminar meetings with University personnel are required. Prerequisites: 050, 051, and 052.

101. **Survey of Institutions.** (2)
Orientation and exposure to institutions in general and specifically to agencies identified with helping services. Emphasis will be on different kinds of institutions, what types of residents they serve, what kinds of professionals are employed there, what the goals of the institution are, and what the political, social, and economic factors are that influence the operation of the institution.

102. **Principles of Interviewing.** (2)
Provides basic knowledge of the interviewing process with emphasis on developing interviewing skills. Developing an awareness of the ways in which the student's background, attitude, and behavior influence the interview. With the assistance of videotape, students will be expected to role-play and record interviews which will provide material for class critique and discussion.

103. **The Case Study.** (3)
Develops a student's data-gathering ability through the process of: (a) asking a question that needs to be answered re: a client's behavior; (b) choosing the appropriate observational, historical, personal method of data collection necessary to answer the question; (c) organizing, synthesizing, and interpreting the information; and (d) reporting the finding via a formal written report and/or an oral report to a treatment/teaching team.

105. **Group Dynamics.** (3)
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. Then through participation and/or initiation of a self-help group, learn methods of effecting change in the area of drug abuse, employment, alcoholism, etc.

107. Functions and Systems of the Body. (3)
Exposure to the functioning of the human systems in order to develop an understanding of the interactive effects of the various systems. Emphasis will be placed on picking up cues of bodily malfunction when interviewing and observing clients.

108. Institutions and the Exceptional Child. (3)
Theory of abnormal development as it manifests itself in the infant through adolescent. Behavioral characteristics and causes of emotional and social deviancy in children. Specific intervention techniques demonstrated with the (1) autistic, (2) severely disturbed, or (3) combined neurologically impaired child with relationship problems. An examination of how institutions and institutionalization hinder and help the child's growth and development.

109. New Techniques of Assessment and Intervention. (3)
The whole approach to intervening in people's lives is changing rapidly as the concept of community involvement becomes integral to human services. A focus on (a) environmental manipulation (e.g., housing, getting a job, getting clients out of jail, social network therapy); (b) counseling with the individual and/or family members; (c) encounter and confrontation techniques with client and relevant family members are only a few of the techniques that will be explored in this course.

110. The Culture of Youth. (3)
The changing mores and value systems of the youth of our country make it imperative that workers involved with the 13-18 year old group understand causative factors in regard to drug abuse, juvenile delinquency, social revolution, an increasing involvement and commitment to ecological and social issues. A variety of peer group support systems will be explored through observation and participation in social clubs, therapy groups, activity groups, and informal neighborhood cliques.

111. Dimensions of Growth and Development. (3)
This course examines the sequentional 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.

149. Workshop in Human Service Problems. (3)
Provides an opportunity for individual and/or small groups to explore in depth a problem that they have identified such as (1) conflicts in establishing a self-help center for alcoholics; (2) developing a parent education group; or (3) teaching a course to professionals in the Community Service field on "Life and Culture in the Barrio."

MODERN AND CLASSICAL LANGUAGES

PROFESSORS W. H. Roberts (Chairman), J. Kolbert, R. R. MacCurdy, D. A. McKenzie, M. R. Nason, A. Rodríguez, J. E. Tomlins, S. R. Ulibarrí, J. E. White; ASSOCIATE PROFESSORS C. M. Book, E. T. Book, G. L. Brower, R. Cobos, P. H. Fernández, R. Holzapfel (Associate Chairman of German), T. Holzapfel, R. C. Jespersen; ASSISTANT PROFESSORS J. J. Bergen, G. D. Bills (Assistant Chairman), S. L. Guyler, R. D. Herron, E. E. Lamadrid, B. T. Lindsey, P. Murphy, G F. Peters, W. S. Smith, J. T. Timm; INSTRUCTORS L. J. Márquez, R. Welsh; PART-TIME INSTRUCTORS P. K. Pabisch, L. Hoshour, E. Robert, M. F. Sovereign.

Explanation of footnotes not indicated will be found on p. 296.

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 required to take a placement examination administered by the department. Normally students in other languages with 2 years' high school credit who intend to continue the study of the same language will take a second (102) semester course; students with 3 years will take a third (251) semester course; students with 4 or more years will take a fourth (252) 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 6 hours of another Romance language or Latin (or equivalent).

PERIOD MINOR

Students majoring in any foreign language may take the period minor described under COMPARATIVE LITERATURE offerings on p. 335.

MODERN LANGUAGES

No major or minor study offered.

292. Introduction to the Study of Language. (3 or 4)
(See Ling 292.)

306. Introduction to the Study of Foreign Literatures. (3)
Designed to give students experience in the methods and techniques of literary criticism by means of exercises in various procedures of analysis. Recommended for all undergraduate majors in modern languages. Prerequisites: the intermediate courses or equivalent.

***457. Special Topics in Modern Languages.** (3)‡

***480. Second Language Pedagogy.** (3)
(Also offered as C&I 480)

***515. Medieval Paleography.** (3) White
Practical paleography of all medieval periods and handwritings, concentrating on Visigothic, Carolingian, Gothic, and "lettre batarde." Transcription of texts in Latin and Romance languages.

***516. Old Provençal-Old Catalan.** (3) White
Their evolution from Latin; selected readings, primarily in the Old Provençal lyric.

***517. Comparative Romance Philology.** (3) White
Comparative phonology, morphology, syntax, and semantics of the Romance languages with primary emphasis on Gallo-Romance, Ibero-Romance, and Italo-Romance; their evolution from Vulgar Latin.

***518. Medieval Romance Lyric.** (3) Tomlins, White
Representative readings in medieval lyric poetry in French, Portuguese, Provençal, and Spanish, including an introduction to the Hispano-Arabic lyric. Prerequisite: Span 470 or French 501.

***555. Seminar in Linguistics and Language Pedagogy.** (1-3) Rigsby, Spolsky
(See Ling 555.)

***580. Seminar in Modern Languages and Literatures.** (3)
(Also offered as Comp L 580.) Intradepartmental seminar to provide opportunity for study in literary or other topics which relate to more than one foreign language and culture.

AMERICAN INDIAN LANGUAGES

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.

203-204. Intermediate Navajo. (3,3)
Prerequisite: 101-102 or 105 or equivalent. <203—Fall, 204—Spring>

***311-312. Introduction to Navajo.** (3,3)
Designed for graduate students. Undergraduates may enroll with permission of instructor only. Does not satisfy the language requirement of the College of Arts and Sciences. Nava 101-102 and 311-312 may not both be counted for credit. <311—Fall, 312—Spring>

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>

CLASSICS

MAJOR STUDY

Temporarily discontinued.

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 p. 335.

FRENCH

MAJOR STUDY

24 hours in French courses numbered above 290, including 301, 302, 351, 352, 405; and 2 years of college work in another foreign language (or reading knowledge).

MINOR STUDY

12 hours in French courses numbered above 290 including 301 or 302.

PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES

Students who have studied French in high school and who plan to continue it at the University are required to take a placement test administered by the department.

101-102. Elementary French. (3, 3) T. Book and Staff

105. Basic French for Graduate Students. (3)
Fundamentals of French grammar. Accelerated course for students preparing to take graduate reading examination. Will not satisfy language requirement of College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Fall Semester on demand>

106. Rapid Reading for Graduate Students. (3)
Continuation of French 105. Rapid Reading of French texts in the sciences and humanities. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Spring Semester on demand>

251-252. Intermediate French. (3, 3) T. Book and Staff
Prerequisites: 101-102, or equivalent.

254. French Conversation and Composition. (3) Hoshour
Designed primarily to give qualified students of 251-252 extra practice in the oral use of the language; therefore, it is recommended that it be taken concurrently with 251 or 252. Enrollment limited to 15 students.

275-276. Beginning French (Accelerated). (3, 3)
275 and 101-102 may not both be counted for credit; 276 and 251-252 may not both be counted for credit. Prerequisite: 6 hours (or equivalent) of another Romance language or Latin.

French 252 or the equivalent is prerequisite to all courses listed below, except 335.

***301-302. Advanced Composition and Conversation.** (3, 3) C. Book, Hoshour, Kolbert, Murphy
Prerequisite: 254 or the equivalent.

306. Introduction to the Study of Foreign Literatures. (3)
(See M Lang 306.)

***335. French Literature in Translation.** (3) Kolbert, Murphy
(See Comp L 335.) Does not count for the French major or minor.

***351-352. Survey of French Literature.** (3, 3) C. Book, Murphy, White
351: Origins to 1800; 352: 1800 to present.

***401. French Stylistics and "Explication de Textes."** (3) C. Book, Kolbert
Analysis of texts of poetry, prose, and drama, and review of literary movements. Required for the M.A. degree.

***405. French Phonology.** (3) T. 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 18th 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) T. Book
(Also offered as Sec Ed 440.) Prerequisite: Sec Ed 361. Does not count for the French major or minor. <Spring>

***441. French Prose Fiction of the 19th Century.** (3) T. Book, Kolbert
The most representative novels of the Romantics, Realists, and Naturalists.

***442. French Dramatic Literature of the 19th Century.** (3) C. Book
Survey of the drama from the melodrama and neoclassicism through the Théatre d'art of Paul Fort.

***443. Practicum in 19th Century French Theatre.** (3) C. Book
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 20th Century.** (3) T. Book, Kolbert
Selected novels from Gide and Proust through the Nouveau Roman.

***452. French Dramatic Literature of the 20th Century.** (3) T. Book
Survey of leading plays of contemporary era, culminating with the theatre of the absurd.

***453. Practicum in 20th Century French Theatre.** (3) C. Book
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) C. Book, Kolbert
460: to 1800; 461: since 1800.

497. Undergraduate Problems. (1 to a maximum of 4)

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) T. Book
Required of all new teaching and graduate assistants in French; others by permission of instructor only. <Fall>

***501. History of the French Language.** (3) White
Evolution of Latin to French with selected medieval readings. Required for the M.A. degree.

***502. Readings in Medieval French Literature.** (3) White
Intensive readings in the "Chansons de geste," "romans courtois," lays, and other genres. Selections are in Old French.

***503. Proseminar in Medieval French Genres.** (3) White
Readings in the romances of chivalry, lyric poetry, **Romance of the Rose, Roman de Renart,** chronicle or other works, depending on student interest.

***505. Introduction to Research Methods.** (1) C. Book, Kolbert
Systematic study of scholarly and bibliographical research tools; practical projects assigned. Required for the M.A. degree.

***510. History of French Literary Criticism.** (3) Kolbert
Principal movements and methods of French criticism from the Renaissance through Neo-Criticism. 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) C. Book, Murphy
Relationship of historical, philosophical, and sociological tendencies to French literature. Readings vary according to needs of the students and specializations of the instructor.

***521. Parnassian and Symbolist Poetry.** (3) Kolbert

***523. Realism and Naturalism.** (3) T. Book, Kolbert

***524. Literature and Art in the 19th Century.** (3) C. Book
Study of the close relationship of the two disciplines; emphasis on the aesthetics of plastic and graphic arts.

***551. Problems.** (1-6 hrs. per semester)
For M.A. candidates.

***560. Seminar in French Literature.** (3)‡
Topic may deal with individual authors, genres, or periods.

***599. Master's Thesis.** (1-6 hrs. per semester)

***651. Problems.** (1-6 hrs. per semester)
For Ph.D. candidates.

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

GERMAN

MAJOR STUDY

A student may select one of the following two options with the approval of the German adviser.

1. 36 hours in German courses above 300.
2. 30 hours in German courses above 300, and 2 years of college work in another foreign language (or reading knowledge).

MINOR STUDY

15 hours in German courses numbered above 300.

PLACEMENT-ELEMENTARY AND INTERMEDIATE COURSES

Students who have studied German in high school and who plan to continue it at the University are required 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 does not feel qualified. A student, if he so desires, may take the beginning course (101 or 103) for credit.

OPTIONS IN FIRST YEAR

Students have a choice in the first year of 101-102, an integrated course stressing reading, writing, listening, and speaking skills, or 103-104, a course which includes reading and writing but places primary emphasis on listening and speaking skills.

101-102. Elementary German. (3, 3) Jespersen, Pabisch

103-104. Elementary German—Conversational Emphasis. (3, 3) Peters
A beginning course for students who are primarily interested in acquiring a speaking knowledge of German. Extensive use of audio-visual materials.

105. Basic German for Graduate Students. (3) Welsh
Fundamentals of German grammar. Accelerated course for students who are interested in a reading knowledge of German. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Fall>

106. Reading for Graduate Students. (3) Welsh
Continuation of German 105. Reading of German texts in the sciences and humanities. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Spring>

OPTIONS IN SECOND YEAR

Students have a choice in the second year of a reading or an oral emphasis. Those intending to go beyond the second year should take the oral emphasis.

203-204. Intermediate German—Oral Emphasis. (3, 3) Jespersen, Peters
Prerequisites: 101-102 or 103-104 or the equivalent.

251-252. Intermediate German—Reading Emphasis. (3, 3) R. Holzapfel, Welsh
Prerequisites: 101-102 or the equivalent.

254. German Conversation. (1-3)
For intermediate students who want to improve speaking skills. It is recommended that it be taken concurrently with 203-204 or 251-252. May be repeated to a maximum of three hours credit.

256. German Folksongs. (1-3)
Informal study and singing of German folksongs. Open to all students, including those in the first year of German. May be repeated to a maximum of three hours credit.

262. Scientific German. (3)
Prerequisite: 251 or equivalent.

German 204 or equivalent is prerequisite to all courses below except 336.

***301-302. Advanced Conversation and Composition.** (3, 3) Welsh

306. Introduction to the Study of Foreign Literatures. (3)
(See M Lang 306.)

307. Introduction to German Literature. (3) R. Holzapfel, Peters
307 is a prerequisite for all literature courses listed below, except 336.

***336. German Literature in Translation.** (3) R. Holzapfel, Jespersen, Peters
(See Comp L 336.) Does not count for the German major or minor.

***345. German Civilization.** (3) Welsh

***351-352. Survey of German Literature.** (3, 3) R. Holzapfel, Jespersen

***401-402. Contemporary Germany.** (3, 3) Peters, Pabisch
Development of language skills on an advanced level using cultural materials from contemporary Germany. Prerequisite: 302 or equivalent.

***405. German Phonology.** (3)
Phonetic and phonemic system of German.

***445. Teaching of German.** (3)
(Also offered as Sec Ed 445.) Does not count for the German major or minor.

***455. Medieval and Renaissance Literature.** (3)

***460. Age of Goethe.** (3) Peters

***465. Romanticism.** (3) Jespersen, Peters

***470. Realism and Naturalism.** (3) Jespersen

***475. Contemporary Literature.** (3) R. Holzapfel

***477. Modern German Drama.** (3) R. Holzapfel

***480. The "Novelle."** (3) Jespersen

***485. Lyric Poetry.** (3)

490. Undergraduate Seminar. (3)

497. Undergraduate Problems. (1 to a maximum of 4)

***551. Problems.** (1-6 hrs. per semester)

GREEK

MAJOR STUDY

Not offered.

MINOR STUDY

Temporarily discontinued.

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) White
(Alternates yearly with 101-102.) Prerequisite: 102 or equivalent.

***339. Greek Drama in Translation.** (3)
(See Comp L 339.)

***341. Greek Mythology.** (3) Smith
(See Comp L 341.)

***342. Greek Non-Dramatic Literature in Translation.** (3)
(See Comp L 342.)

497. Undergraduate Problems. (1 to a maximum of 4)

***551. Problems.** (1-6 hrs. per semester)

ITALIAN

No major or minor study offered.

275-276. Beginning Italian (Accelerated). (3, 3)
Prerequisite: 6 hrs (or equivalent) of another Romance language or Latin.

295-296. Advanced Italian. (3, 3)
Prerequisite: 276 or equivalent.

***475. Dante.** (3) White
(See Comp L 475.)

497. Undergraduate Problems. (1 to a maximum of 4)

***551. Problems.** (1-6 hrs. per semester)

LATIN

MAJOR STUDY

Not offered.

MINOR STUDY

12 hours in courses numbered above 250.

PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES

Normally students with 2 years' high school credit in Latin will take the second (102) semester course; students with 3 years will take the third (251) semester course; students with 4 years will take the fourth (252) semester or higher course. However, a student may elect to take the beginning course (101) for credit.

101-102. Elementary Latin. (3, 3)

251-252. 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: 252 or equivalent.

***340. Latin Literature in Translation.** (3) Zavadil
(See Comp L 340.)

***351-352. Latin for Language Students.** (3, 3) McKenzie
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 4)

***551. Problems.** (1-6 hrs. per semester)

PORTUGUESE

MAJOR STUDY

30 hours in Portuguese courses including 301, 307, 6 hours of Portuguese literature, 12 hours of Brazilian literature, and 2 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 Romance language or Latin.

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>

306. Introduction to the Study of Foreign Literatures. (3)
(See M Lang 306.)

***307. Introductory Readings in Literature.** (3) <Fall, Spring>

***351. Survey of Portuguese Literature.** (3) Timm, Tomlins
Representative readings from the medieval **Cancioneiros** to Modernism and later trends.

***352. Contemporary Portuguese Literature.** (3) Timm, Tomlins
Investigation of the impact of the European Vanguard on 20th century Portuguese letters; lyric poetry and Neo-Realism in the novel.

***357. Brazilian Poetry from the Colonial Period to Modernism.** (3) Tomlins
Arrival of European Renaissance and Baroque modes on Brazilian soil: Neo-Classicism, Arcadism, Parnassianism, and Symbolism.

***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.

***361. Brazilian Prose Fiction and Essay from Beginnings to Modernism.** (3) Tomlins
Readings in the major trends of Brazilian prose: the Baroque sermon, 19th century developments, Machado de Assis, **Os Sertões.**

***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.

***365. Camões and Gil Vicente.** (3) Tomlins
Origins of Portuguese literature in the lyric and its continuation in the 16th century primitive drama; lyric poetry of Camões and the epic **Lusiads.**

***396. Iberian History since 1700.** (3)
(See Hist 396.)

***421. Modern Brazilian Drama.** (3)
Representative plays from the 18th century to the present.

497. Undergraduate Problems. (1 to a maximum of 4)

***501. History of the Portuguese Language.** (3) White
Evolution of Latin to Portuguese with selected medieval readings. Required for the M.A. degree.

***504. Seminar in Ibero-American Studies.** (3) Dolkart, Floyd, Herron, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Hist, Ib Am, and Span 504.) History, literature, and institutions of Latin America. <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. Problems. (1-6 hrs. per semester)** Herron, Tomlins
For M.A. candidates.

***560. Seminar in Portuguese Literature.** (3)‡
Topic will deal with individual authors, genres, or periods.

***570. Seminar in Brazilian Literature.** (3)‡
Topic will deal with individual authors, genres, or periods.

***599. Master's Thesis. (1-6 hrs. per semester)**

***651. Problems. (1-6 hrs. per semester)** Herron, Tomlins

***699. Dissertation. (3-9 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 numbered above 250, including Russ 254 and 307.

PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES

Normally the student with 2 years of high school Russian will take a second (102) or third (251) semester course; the student with 3 years will take the third (251) or the fourth (252) semester course. However, a student may elect to take the beginning course (101) for credit.

101-102. Elementary Russian. (3, 3)

105. Basic Russian for Graduate Students. (3)
Fundamentals of Russian Grammar. Accelerated course for students preparing to take graduate reading examination. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Fall Semester on demand>

106. Rapid Reading for Graduate Students. (3)
Continuation of Russian 105. Rapid reading of Russian texts in the sciences and humanities. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Spring Semester on demand>

251-252. Intermediate Russian. (3, 3)
Prerequisites: 101-102, or the equivalent.

254. Russian Conversation and Composition. (1-3) Lindsey
Pre- or corequisite: 251-252. For intermediate students who wish to improve speaking and writing skills. May be repeated to a maximum of three hours credit.

306. Introduction to the Study of Foreign Literatures. (3)
(See M Lang 306.)

307. Introduction to Russian Literature. (3) Lindsey
Readings in the poetry of Pushkin, Lermontov, and Tiutchev and in the prose of Tolstoy, Dostoevsky, and Chekhov. Emphasis on increased reading comprehension in Russian and on major literary aspects of the individual authors.

***338. Russian Literature in Translation.** (3) T. Holzapfel, Lindsey
(See Comp L 338.)

***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.

***490. Undergraduate Seminar in Russian Literature.** (3)‡ Lindsey
Topic will deal with individual authors, genres, or periods.

497. Undergraduate Problems. (1 to a maximum of 4)

SPANISH

MAJOR STUDY

30 hours in Spanish courses numbered above 290, including 301-302, 351, 352 or 358, and 453; and completion of work in another foreign language at the level of 252 or 276 (or reading knowledge). It is recommended that students who do not speak Spanish natively take 254 concurrently with 251 or 252.

MINOR STUDY

15 hours in Spanish courses numbered above 290, including 301-302.

PLACEMENT—ELEMENTARY AND INTERMEDIATE COURSES

Normally students with 2 years' high school credit will take the second (102) semester course; students with 3 years will take the third (251) semester course; students with 4 or more years will take the fourth (252) semester or higher course. However, the student may elect to take the beginning course (101) for credit.

COURSES FOR SPANISH-SPEAKING STUDENTS

New Mexican students who speak Spanish natively should take the sequence of courses designed for Spanish-speakers: 112, 225, and 226. Such students are required to take a placement test administered by the department. This test is for advisement only; no student will be forced into a course for which he does not feel qualified. Students who take 225, 226 cannot receive credit for 251, 252, or 254. Span 112, 225, and 226 are not designed for foreign students whose education has been in Spanish.

I. LANGUAGE

101-102. Elementary Spanish. (3, 3) Lamadrid and Staff

105. Basic Spanish for Graduate Students. (3)
Fundamentals of Spanish grammar. Accelerated course for students preparing to take graduate reading examination. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Fall Semester on demand>

106. Rapid Reading for Graduate Students. (3)
Continuation of Span 105. Rapid reading of Spanish texts in the sciences and humanities. Will not satisfy language requirement of the College of Arts and Sciences. Undergraduates may not enroll without permission of instructor. <Spring semester on demand>

112. Español elemental para estudiantes de habla española. (3) Márquez
Introduction to standard Spanish designed for New Mexican Spanish-speaking students. Grammar, vocabulary, readings in Spanish culture. <Fall, Spring>

225-226. Español avanzado para estudiantes de habla española. (3, 3) Márquez
Prerequisite: 112 or the equivalent. <Fall, Spring>

251-252. Intermediate Spanish. (3, 3) Bergen and Staff
Prerequisite: 102 or the equivalent. <Summer, Fall, Spring>

254. Elementary Spanish Conversation. (3)
Designed to give qualified students of intermediate Spanish extra practice in the oral language. Enrollment limited to 15 students. Pre- or corequisite: 251 or 252. <Fall, Spring>

***301-302. Advanced Composition and Conversation.** (3, 3) Cobos, Márquez
Thorough review of grammar and usage; with readings, conversation, and creative writing. Prerequisite: 226, 252, or the equivalent. <Fall, Spring>

***311. Southwest Spanish.** (3) Cobos
Introduction to study of Spanish of U.S. Southwest, especially New Mexico; comparisons with standard Spanish. Prerequisite: 226 or 302 or equivalent. <Spring>

***315. Creative Writing for New Mexico Spanish-speaking Students.** (3) Ulibarrí
Writing of original short stories and poems, with emphasis on the use of New Mexican Spanish.

401. Spanish Stylistics. (3) Fernández
Literary style, figurative language, literary genres and versification, aesthetics, text analysis. Good command of Spanish essential. <Fall>

II. LINGUISTICS, PHILOLOGY, AND METHODOLOGY

***440. Spanish Linguistics for the High School Teacher.** (3) Lamadrid
With approval of adviser, may be counted toward the Spanish major. Prerequisite: 302. Suggested prior or parallel course: Sec Ed 361. <Fall>

***441. Teaching of Spanish.** (3) Lamadrid
(Also offered as Sec Ed 441.) Applies linguistic basis acquired in 440 to problems of teaching. May be counted for Teaching Certificate, but not for Spanish major or minor. Students are advised to take 441 prior or parallel to Student Teaching. Prerequisite: 440. <Spring>

***453. Spanish Phonology.** (3) Bills
Introduction to Spanish phonetics and phonemics. <Summer, Fall, Spring>

***470. History of the Spanish Language.** (3) Bergen
Major features of the evolution from Vulgar Latin to Modern Spanish. Required of all candidates for the M.A. and M.A.T.S. degrees. <Fall>

***500. Teaching Practicum.** (1)‡ Bergen, Lamadrid
At least two semesters required of all new teaching and graduate assistants in Spanish; others by permission of instructor only. <Fall, Spring>

***515. Medieval Paleography.** (3) White
(See M Lang 515.)

***516. Old Provençal-Old Catalan.** (3) White
(See M Lang 516.)

***517. Comparative Romance Philology.** (3) White
(See M Lang 517.)

***540. Seminar in the Language of Spain or Spanish America.** (3)‡ Bills
Selected topics in Spanish descriptive linguistics.

***541. Research Methods for Teachers.** (3) Bergen, Lamadrid
Language testing, the language laboratory, and the arts of research and writing. Required of all candidates for the M.A.T.S. degree, as a substitute for 508. <Spring>

***542. The Structure of Spanish.** (3) Bergen, Bills
Descriptive analysis of the phonological, grammatical, and semantic structure of contemporary Spanish; emphasis on morphology and syntax. Prerequisite: 554.

***554. Spanish Linguistics: Theory and Application to Teaching.** (3) Bergen
Intensive linguistic analysis of Spanish structure in contrast to English structure, and methods of teaching Spanish. Pre- or corequisite: 453. <Fall>

***556. Spanish Linguistics: Problems of Language Instruction.** (3) Bergen
A continuation of 554. Emphasis on individual research. Prerequisite: 554. <Spring>

***570. Spanish Historical Grammar.** (3) Bergen, White
Study of the phonological, morphological, and semantic evolution from Latin to Spanish; intensive reading of selected Old Spanish texts. Required of all candidates for the Ph.D. degree. Knowledge of Latin grammar required.

III. LITERATURE

A. Peninsular Literature

292. Introduction to Spanish Literature. (3) Ulibarrí
Panoramic view of Spanish literature and literary criticism from the beginning to the present. Prerequisite: 226, 252, or the equivalent. <Fall, Spring>

Span 292 or the equivalent is prerequisite for all literature courses listed below, except 334 and 337.

***337. Spanish Literature in Translation.** (3) MacCurdy
(See Comp L 337.) Does not count for the Spanish major or minor.

***350. Nineteenth Century Spanish Novel.** (3) Fernández, Rodríguez, Ulibarrí
Analysis of the development from costumbrista and romantic novels to regional and naturalistic novels.

***351-352. Survey of Spanish Literature.** (3, 3) Fernández, Guyler
351: 11th through 17th centuries; 352: 18th, 19th, and 20th centuries. <Fall, Spring>

***421. Nineteenth Century Spanish Drama.** (3) Rodríguez
Neoclassicism, Romanticism, the Alta Comedia, and Realism; emphasis on the evolution of Romanticism.

***456. Special Topics in Spanish Literature.** (3)‡
Topic will deal with individual authors, genres, or periods.

***460. Spanish Poetry.** (3) Ulibarrí
Stylistic, linguistic, and analytical approach to selected poems and poets of each literary epoch from the beginning to the present. <Spring>

***461. Contemporary Spanish Literature.** (3) Fernández
20th Century Spanish literature from Modernism and the Generation of 98 to Post-Civil War writers. <Fall>

***466. Lope de Vega and His Contemporaries.** (3) MacCurdy
Survey of the Spanish drama from the **Auto de los reyes magos** through Lope de Vega and his major contemporaries.

***467. Calderón and His Contemporaries.** (3) MacCurdy
A continuation of 466. Emphasis on Calderón, Francisco de Rojas, and Agustín Moreto.

***475. Cervantes: The Quijote.** (3) MacCurdy
A detailed analysis of the **Quijote** and treatment of its place in world literature.

***476. Cervantes: Other Works.** (3) MacCurdy
Works other than the **Quijote** with emphasis on the **Novelas Ejemplares** and the theater.

***502. Proseminar in Medieval Spanish Genres.** (3) Tomlins
Readings in the epic (El Cid), hagiography (Berceo), lyric elements in didactic literature (Sem Tob and Juan Ruiz), chronicle (Alfonso X), and the lyric tradition of Hispano-Arabic, Galician-Portuguese, and Portuguese poetry. Prerequisite: 470.

***507. Seminar in the Spanish Novel.** (3)‡ Fernández
Topic will deal with individual authors or periods.

***518. Medieval Romance Lyric.** (3) Tomlins, White
(See M Lang 518.)

***560. Seminar in Spanish Literature.** (3)‡
Topic will deal with individual authors, genres, or periods.

***565. Seminar in the 20th Century Spanish Essay.** (3) Fernández
Emphasis on tthe literary concepts and philosophical ideas of Unamuno, A. Machado, Ortega, E. d'Ors, Pérez de Ayala, J. Marías, and others.

***566. Seminar in Golden Age Drama.** (3)‡ MacCurdy
Topic will deal with individual authors.

***568. Seminar in 20th Century Spanish Drama.** (3)‡ Fernández
Topic will deal with individual authors.

***571. Seminar in Spanish Poetry.** (3)‡ Ulibarrí
Topic will deal with individual poets or periods.

***578. Seminar in the Spanish Picaresque Novel.** (3) Guyler
Most important works of the 16th and 17th centuries; emphasis on **Lazarillo de Tormes** and the **Buscón.**

B. Spanish American Literature

***334. Spanish American Literature in Translation.** (3)
(See Comp L 334.) Does not count for the Spanish major or minor.

***347. Introduction to Spanish American Fiction.** (3) Brower, T. Holzapfel
Literary analysis of contemporary novelistic and story forms. <Fall>

***357-358. Survey of Spanish American Literature.** (3, 3) Brower, Nason, T. Holzpafel, Roberts
357: From the Discovery to 1880; 358: 1880 to the present. <Fall, Spring>

***455. Special Topics in Spanish American Literature.** (3)‡
Topic will deal with individual authors, genres, or periods.

***458. Spanish American Short Story.** (3) Brower, T. Holzapfel
The short story as a genre; its diverse forms in contemporary Spanish America.

***463. Modern Spanish American Poetry.** (3) Roberts
Careful study of Rubén Darío and his contemporaries and main trends to approximately 1960.

***464. Criollismo in Spanish American Literature.** (3) Nason
Nativist literature, with special attention to prose fiction, from mid-19th to mid-20th centuries.

***465. Spanish American Vanguard Poetry.** (3) Brower
Survey of Spanish American poetry since Modernism.

***468. Literature of the River Plate Region.** (3) Nason
Major literary works and movements of Argentina and Uruguay.

***485. 20th Century Spanish American Novel until 1940.** (3) T. Holzapfel, Nason
Survey of the major trends in early 20th century prose fiction.

***486. 20th Century Spanish American Novel since 1940.** (3) T. Holzapfel
Survey of the major trends in contemporary prose fiction with emphasis on the "new novel."

*504. **Seminar in Ibero-American Studies.** (3)‡ Floyd, Herron, T. Holzapfel, Lieuwen, Nason, Tomlins
(Also offered as Hist, Ib-Am, and Port 504.) History, literature, and institutions of Latin America. <Fall, Spring>

*561. [462] **Seminar in the Drama of Spanish America.** [Spanish American Theater] (3) T. Holzapfel
The drama since Florencio Sánchez.

*562. **The Modernist Movement in Spanish American Poetry.** (3) Brower, Roberts
The essentials of Modernism as reflected in selected major figures of the movement.

*563. **Seminar in 20th Century Spanish American Fiction.** (3)‡
Topic will deal with individual authors or genres.

*564. **Seminar in Spanish American Essay.** (3) Brower
The essay as a problematical genre; literary and non-literary implications.

*567. **Seminar in Spanish American Literature.** (3)‡
Topic will deal with individual authors, genres, or periods.

IV. CIVILIZATION AND FOLKLORE

296. **Highlights of Hispanic Culture.** (3) Cobos
Major aspects of Spanish culture, particularly as it has influenced western civilization; lectures by interdepartmental specialists.

297. **Southwestern Hispanic Folklore.** (3) Cobos
Folkways of the Spanish-speaking people of the American Southwest; language, customs, beliefs, music, and folk sayings. Taught in Spanish. <Spring>

*345. **Spanish Civilization.** (2) Fernández, Ulibarrí

*346. **Ibero-American Civilization.** (3) Cobos
Development of European culture in Latin America and the fusion with the various indigenous cultures. Taught in Spanish. <Spring>

*361. **Hispanic Folktales.** (3) Cobos
Transmission of the folktale from Spain to the New World; collection of local folktales by students. Taught in Spanish.

*362. **Hispanic Folk Ballads and Songs.** (3) Cobos
Study of the various types of ballads sung throughout the Hispanic Southwest. Taught in Spanish.

V. General

306. **Introduction to the Study of Foreign Literatures.** (3)
(See M Lang 306.)

497. **Undergraduate Problems.** (1 to a maximum of 4)

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.

*508. [505, 506] **Research Methods, Literary Theory, and Bibliography.** [Introduction to Research Methods, Spanish Bibliography] (3) Brower, Guyler, T. Holzapfel
Introduction to literary theory, criticism, and history, including bibliographical work and the practical uses of research methods. Required of all incoming graduate students, except M.A.T.S. candidates. <Fall>

*551. **Problems.** (1-6 hrs. per semester)
For M.A. candidates.

*599. **Master's Thesis.** (1-6 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

*651. **Problems.** (1-6 hrs. per semester)
For Ph.D. candidates.

*699. **Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

SWAHILI

No major or minor study offered.

110. **Introduction to Swahili.** (3)

MUSIC

ASSOCIATE PROFESSOR W. Seymour, Chairman; PROFESSORS J. Batcheller, H. M. Miller, T. Philips, W. E. Rhoads, G. Robert, M. Schoenfeld; ASSOCIATE PROFESSORS F. Bowen, F. Dart, L. Felberg, H. Garcia, D. McRae, J. Snow, J. Whitlow, W. Wood; ASSISTANT PROFESSORS A. Chavez, J. de Keyser, A. Edwards, E. Ehly, D. Hawley, W. Selby, LECTURERS J. Grealish (part-time), J. Jacobs, (part-time), L. McLeod, D. Randall (part-time), W. Sharp (part-time), S. Wilkinson (part-time); and new 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. 250-254.

MINOR STUDY

1. For a minor in music: 20 hours, including a total of 8 hours in music theory; 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. 469.

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 NON-MAJORS

139. Music Appreciation A. (3) Miller, Whitlow
Introduction to music. The basic materials and properties of music; media and forms. <Fall and alternate Summers>

140. Music Appreciation B. (3) Miller, Whitlow
Introduction to music literature. Symphony, opera, religious music, solo song, dance music, and other major categories of music literature. <Spring and alternate Summers>

171. Music Today. (2) deKeyser, Bowen
A study of music in today's society, covering popular, serious, experimental, avant garde, and electronic music and the relationship of current musical thought to contemporary musical institutions. <Fall>

295. Music in Recreation. (2) Batcheller
The social foundations and practices of music in recreation. Stress will be placed on equipping the recreational leader with effective means to deal musically with young children, older children, and adults. Emphasis will be placed on all phases of the public performance from planning to production. <Fall>

296. Music in Recreation. (2) Batcheller
Designed to prepare 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) Miller
From antiquity to the present. Non-technical study of the forms, styles, schools, principal composers, and representative masterpieces of each era. <Fall>

372. General History of Music. (3) Miller
Continuation of 371. <Spring>

APPLIED

Group Instruction. Some Class instruction in applied music is provided for students whose experience and background do not qualify them for private instruction. These course numbers are:

Piano, 111-112, 211-212
Voice, 109-110; and
Other instruments, 155-001 through 155-005.

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, you should 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, you should 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. [Group Voice] (1)
Open to all beginners in voice exclusive of voice majors. <Fall, Spring>

110. Group Voice II. [Group Voice] (1)
Prerequisite: 109. <Fall, Spring>

111. Group Piano I. [Group Piano] (1)†
Open to all beginners in piano exclusive of piano majors. <Fall, Spring>

112. Group Piano II. [Group Piano] (1)†
Prerequisite: 111. <Fall, Spring>

113. Mexican Guitar. (1) S. Gutierrez
Group instruction. Audition required.

114. Mexican Guitar. (1) S. Gutierrez
Continuation of 113. Audition required.

119-120. Applied Music. Freshman major, secondary or elective course. **(1 or 2 hrs. each semester)** <Summer, Fall, Spring>

155. Orchestral Instruments. (1)†
Group instruction in the playing of woodwind, brass, percussion, high string instruments, and low string instruments. For music education majors only. <Summer, Fall, Spring>

201-202. Applied Music. Major Sophomore Course. **(2 or 4 hours each semester)** <Summer, Fall, Spring>

211. Group Piano III. [Group Piano] (1)
Open to all students. Prerequisite: 112. <Fall>

212. Group Piano IV. [Group Piano] (1)
Open to all students. Particular attention given to preparation for the piano proficiency examination. Prerequisite: 211. <Spring>

219-220. Applied Music. Sophomore Secondary or Elective Course. **(1 or 2 hours each semester)** <Summer, Fall, Spring>

301-302. Applied Music. Major Junior Course. **(2 or 4 hrs. each semester)** <Summer, Fall, Spring>

***319-320. Applied Music.** Junior Secondary or Elective Course. **(1 or 2 hours each semester)** 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. Major Senior Course. **(2 or 4 hours each semester)** <Summer, Fall, Spring>

***419-420. Applied Music.** Senior Secondary or Elective Course. **(1 or 2 hrs. each semester)** 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.** Major Graduate Course. **(2 or 4 hrs. each semester)** <Summer, Fall, Spring>

***519-520. Applied Music.** Graduate Secondary or Elective Course. **(1 or 2 hrs. each semester)** <Summer, Fall, Spring>

***569-570. Applied Music.** Graduate Secondary or Elective Course **(1 or 2 hrs. each semester)**

CONDUCTING

363. Conducting. (2)
Basic theory and technique of conducting. Prerequisites: 206, 208; *junior* standing in the major field; piano proficiency. <Fall>

364. Choral Conducting. (2) Ehly
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) Ehly
Prerequisites: 363 and 453, or the equivalent. <Summer>

***565. Advanced Instrumental Conducting.** (2)
Prerequisites: 363 and 453, or the equivalent.

ENSEMBLE

143. University Chorus. (1)‡‡ Ehly
Open to all University students. <Summer, Fall, Spring>

230. Opera Studio. (1)† Philips
Basic training in techniques of Music Theater. Open by audition to singers, conductors, pianists, stage directors, and producers. <Spring>

231. Chamber Music. (1)†
The practice, performance, and study of chamber music in various ensemble groups. <Summer, Fall, Spring>

233. Symphony Orchestra. (1)‡‡
Study and public performance of symphonic literature. <Fall, Spring>

241. University Band. (1)‡‡ Rhoads, Dart
Study and performance of marches and concert band literature. Appearance and performance in uniform at football games, *Commencement*, and other University functions. <Summer, Fall, Spring>

243. A Cappella Choir. (1)‡‡ Ehly
Auditions required. Open to all University students. <Fall, Spring>

***395. Accompanying.** (1)† McLeod
Students accompany other students in practice and at recitals as part of the requirement for receiving credit. <Fall, Spring>

***430. Advanced Opera Studio.** (1-2)† Philips
Advanced performance in Music Theater and Opera, culminating in major performances. Open by audition to singers, conductors, pianist, stage directors, and producers. Prerequisite: 230. <Spring>

HISTORY AND LITERATURE

261. History of Music I. (3)
A study of the forms, styles, schools, principal composers and representative masterworks from antiquity through Baroque. Open to music majors only. <Fall>

262. History of Music II. (3)
Continuation of Music 261, from Baroque to the present. Open to music majors only. <Spring>

274. Concerto. (2) McRae
The form and its principal composers from Bach to the present. Prerequisites: 261, 262.

375. Symphonic Literature. (2) McRae, Miller
A survey of the developments in orchestral music from Bach to the present. Prerequisites: 261, 262. <Fall>

***411. Contemporary Period.** (2) McRae, Miller
Stylistic innovations and tendencies in the music of the twentieth century and the study of representative works by the principal composers. Prerequisites: 261, 262. <Fall>

‡‡ Maximum of 8 hours credit allowed toward degrees in the College of Fine Arts or College of Education, 4 hours in other colleges.

***412. Baroque Period.** (2) Miller
A study of the music of Western Europe from 1600 to 1750 with emphasis on forms, styles, principal composers, and performance practices. Prerequisites: 261, 262. <Spring 1974 and alternate years>

***437. Special Studies in Music Literature.** (2)‡
Intensive study of one composer or genre of composition, to be designated by the instructor. Prerequisites: 261, 262. <Offered upon demand>

***449. Music Repertory.** (2)†
Comprehensive study of the solo repertory for voice or individual instruments. The specific area to be studied is announced in the class schedule when the course is offered. Prerequisites: 261, 262. <Spring>

***471. The Classical Period.** (2) McRae, Miller
The music of the Age of Haydn, Mozart, and Beethoven, their immediate forerunners and their contemporaries. Prerequisites: 261, 262. <Fall 1974 and alternate years>

472. The Romantic Period. (2) McRae, Miller
Music in the nineteenth century after Beethoven; a study of the leading composers and their works. Prerequisites: 261, 262. <Offered upon demand>

***473. Opera.** (2) McRae, Philips
The history of opera and its principal composers. Prerequisites: 261, 262. <Spring 1974 and alternate years>

***476. The Medieval Period.** (2)
A study of music from the Early Christian era to the mid-fifteenth century. Prerequisites: 261, 262. <Offered upon demand>

***477. The Renaissance Period.** (2)
The music of Western Europe from the middle of the fifteenth century to the close of the sixteenth century; its structure, styles, principal composers, and its place in Renaissance society. Prerequisites: 261, 262. <Offered upon demand>

***478. History of Chamber Music.** (2)
A survey of chamber music literature from the Baroque to the present. Prerequisites: 261, 262. <Spring>

***479. Choral Literature.** (2) McRae, Ehly
The principal developments in choral music from Gregorian Chant to the present. Prerequisites: 261, 262. <Summer>

***493. United States Composers.** (2) McRae
The creative trends in the art music of the United States from the 17th century to the present. Special emphasis upon the style and contributions of the most important composers. Prerequisites: 261, 262. <Fall>

***531. Bibliography and Research.** (3) Miller
The study and application of basic methods in musical bibliography, acquaintance with major reference sources; projects in bibliography. Materials and basic techniques of musical research. <Fall>

***533. Seminar in Music.** (3)† Miller
Explorations in various areas of musical research. <Spring>

MUSIC THEORY

103. Fundamentals of Music Theory. (2)
A theoretical study of notation, scales, key signatures, and intervals. Credit is not allowed toward a major in music or music education. <Summer, Fall>

104. Basic Ear-Training. (2)
Designed to relate the aural apprehension of musical sounds to the materials learned in Music 103 through sight-singing, rhythmic and melodic dictation, and keyboard drill. Credit is not allowed toward a major in music or music education. <Summer, Fall>

105. 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 C or better. <Fall, Spring>

106. Music Theory II. (2)
Diatonic part-writing and analysis: inversions, dominant seventh chords, non-harmonic tones, simple modulation. Prerequisite: 105 with grade of C or better. <Summer, Spring>

107. 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: passing score on music theory placement test or completion of Music 104 with grade of C or better. <Fall, Spring>

108. 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 III. (2)
Chromatic alterations and analysis: secondary dominants, chorale harmonization, remote modulation. Prerequisite: 106 with grade of C or better. <Fall>

206. Music Theory IV. (2)
Continued chromatic alterations and analysis. Prerequisite: 205 with grade of C or better. <Spring>

207. Ear-Training III. (2)
More advanced singing and dictation, correlated with the materials of 205. Prerequisite: 108 with grade of C or better. <Fall>

208. Ear-Training IV. (2)
Continuation of advanced singing and dictation. Prerequisite: 207 with grade of C or better. <Spring>

309. Form and Composition. (2) Wood
Analysis of the structural elements of music from Gregorian Chant to the present, and the application of standard formal procedures to the creative process of music composition. Prerequisites: 206, 208. <Fall>

310. Form and Composition. (2) Wood
Continuation of 309. Prerequisite: 309 <Spring>

***405. Counterpoint.** (2)
Analysis and writing in the style of the 16th century. Prerequisites: 206 and 208. <Fall>

***406. Counterpoint.** (2)
Analysis and writing in the style of the 18th century. Prerequisites: 206 and 208. <Spring>

409. Composition. (2) Wood
Techniques and procedures in the composition of music in various forms, styles, and media. Prerequisite: 310. <Fall>

410. Composition. (2) Wood
Continuation of 409. Prerequisite: 409. <Spring>

453. Orchestration. (2) Rhoads
The art of scoring for orchestra, including properties and limitations of string, wind and percussion instruments, notation (transposition and special clefs), principles of combining and balancing instruments, and characteristics of the various "schools" of orchestration. Prerequisites: 206, 208. <Fall>

***463. Band Arranging.** (2) Rhoads
The art of scoring for band and large wind ensemble, including properties and limitations of wind and percussion instruments and the principles of combination and balance. Prerequisites: 206, 208. <Spring>

***505. Advanced Composition.** (2)† Wood
Individual guidance in composing for various instrumental and vocal ensembles; survey of techniques in appropriate fields; completion of one or more major works for public performance. **May be repeated to the limit of 4 hrs. credit.** <Fall, Spring>

***535. History of Music Theory.** (3) McRae, Wood
The historical development of theoretical principles in music, and their application from earliest times up to the present. Study of the relevant documents and texts. <Offered upon demand>

***540. Studies in Musical Analysis.** (3) Wood
Analysis in depth of the technical and aesthetic values in music. Material will vary with interests of the class and of the instructor. <Offered upon demand>

PEDAGOGY

***388. Music Pedagogy. (2)**
Designed especially 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. Prerequisite: 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

209. Diction for Singers. (2)
Study of the International Phonetic Alphabet and its application in the pronunciation of English, French, German, and Italian. <Fall>

387. Vocal Coaching. (1)†
One-half hour of private instruction per week. <Fall, Spring>

490. Interdepartmental Proseminar. (3) Honors Staff
(See F A 490.) <Fall>

THESIS COURSES

499. Senior Thesis. (3)
Open to seniors approved by the departmental honors committee. <Summer, Fall, Spring>

***591. Graduate Recital. (2-4 hrs. per semester)**
For the degree of Master of Music in Applied Music the student is required to perform a full-length graduate recital (a) which he has selected and prepared subject to the approval of a committee comparable to a graduate thesis committee and (b) for which he has written comprehensive program annotations (also subject to the approval of the same committee) and which will be printed on the program of the graduate recital. Work in 591 is to be in addition to that done in 501, 502 (performance majors) or in 519-520, 569-570 (music education concentrators). Students may distribute their major applied study over more than one year but in such cases will be subject to the current fee for applied music for each one-half hour lesson after the first year of study has been completed.

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

MUSIC EDUCATION

CURRICULUM

See p. 253.

MINOR STUDY

4 hours in music theory;
4 hours in piano;
2 hours in voice or another instrument;
2 hours in ensemble; and
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)
A general survey of Music Education designed to assist the student in discovering his personal strengths and weaknesses relative to a career as a professional music educator.

293. Music Skills for the Elementary Classroom Teacher. (2) Batcheller
<Summer 1972 and alternate summers, Fall, Spring>

294. The Teaching of Music in the Elementary Schools. (2) Batcheller
Prerequisite: 293 for non-music majors; 194 for music majors. <Summer, Fall, Spring>

313. Administration of Choral and Instrumental Music. (2) Ehly, Rhoads
Practical study in the administration and organization of programs in the secondary schools for chorus, band, and orchestra. Prerequisites: junior standing in music and 294. <Fall>

314. Fundamentals of Music Theater. (2) Philips
A study of technical, theatrical, and musical problems of producing music theater in schools. Prerequisites: 294 and junior standing. <Spring>

366. Beginning Student Teaching in Music. (2)
Orientation with Music Education experiences in practice teaching. Prerequisites: 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. 210 of this catalog or consult the **Graduate School Bulletin.** <Summer>

***440. Investigations in Music Education.** (3)
A specific area for investigation is announced in the class schedule when the course is offered. Prerequisite: junior standing. <Summer>

***443. Music for the Pre-school Child.** (2) Batcheller
Directed toward the teacher in private pre-school institutions, church school, kindergarten, and the music consultant. Prerequisite: junior standing. <Offered upon demand>

***444. Supervision of Music in the Elementary Schools.** (2) Batcheller
Emphasis on the role of the music consultant, curriculum development, and the materials of instruction. Prerequisite: 294. <Spring>

***445. Junior High School Music.** (2)
The junior high school student, the position of music in the junior high school curriculum, and methods and materials for junior high school music activities. Prerequisite: junior standing. <Fall>

***446. Secondary School Music.** (2)
The secondary schools, the students, the music curricula, the methods and materials. Prerequisite: junior standing. <Spring>

***451. Foundations of Musical Behavior.** (3) Seymour
Acoustics, perception, learning and affective response in musical behavior. Prerequisite: junior standing. <Fall>

***459. Advanced Elementary Music Education** (3) Batcheller
The teaching of music in the elementary classroom; the development of techniques in the teaching of melodic and harmonic music reading; advanced investigations in the use of instrumental and vocal materials; guided research in the current audio-visual aids and the evaluation of music ensemble participation. Prerequisite: junior standing.

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)
See Department of Music Handbook for prerequisites. <Fall, Spring>

463. Student Teaching in the Secondary Schools: Professional Education Block. (6-15)

***532. Research Techniques in Music Education.** (3)
Bibliographical methods and techniques in music education and related fields; methods and techniques of research; semantic knowledge of statistics. <Summer 1972 and alternate summers, Fall>

***534. Seminar in Music Education.** (3)
Individual and group investigation in music education and related areas, reading and discussion of current writings in the above fields. <Spring>

***550. Philosophy of Music Education.** (3) Batcheller, Seymour
Philosophical foundations and principles of music education and their application to practices in school.

***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.

NAVAL SCIENCE

Chairman to be appointed; Commander V. D. Brockmann, USN; Lieutenant W. J. Irwin, USN; Lieutenant B. B. Taylor, USN; and new appointments to be made.

CURRICULUM

See p. 294.

010. Naval Professional Laboratory. (0)
Drills and information for NROTC students. (30 hours each semester)

105. Naval Ship Systems I. (3) Taylor
Introduction to types, structure, and purpose of naval ships. Ship compartmentation, propulsion systems, auxiliary power systems, interior communications, ship control, and elements of ship design to achieve safe operations are included. <Fall>

106. Naval Ship Systems II. (3) Taylor
Continuation of 105. Prerequisite: 105. <Spring>

303. Navigation and Naval Operations. (3)
A study of the 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>

304. Navigation and Naval Operations. (3)
Continuation of 303. Prerequisite: 303. <Spring>

331. Evolution of Warfare. (3)
A study of the evolution of the basic principles and techniques of warfare from 490 BC to the present time. Emphasis is placed on an understanding of the theoretical principles underlying modern tactics and strategy. <Fall 1973 and alternate years>

407. Principles of Naval Organization and Management. (3) Brockmann
Structure and principles of Naval organization and management in which underlying concepts are examined within the context of American social and industrial organization and practice. Emphasis is given to management and leadership functions. <Fall, Spring>

431. Amphibious Warfare. (3)
A study of the 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 1972 and alternate years>

NUCLEAR ENGINEERING

See Engineering, Nuclear

NURSING

PROFESSORS B. L. Murray (Dean), V. Crenshaw, R. Kroska; ASSOCIATE PROFESSORS J. Baca, E. Bear, B. Hicks; ASSISTANT PROFESSORS Z. Bray, S. Ferketich, H. Kee, J. Maurin, M. McGann, M. Pozorski; INSTRUCTORS C. Burton, G. Gorman, S. Jones, C. Keith, S. Mantik, F. Peloza, S. Vairo.

CURRICULUM

See p. 273.

201L. Introduction to Nursing Process. [Fundamentals of Nursing Process] **(5)** Crenshaw
Study of basic concepts in nursing care and the applications in nursing practice focused on care, comfort, cleanliness and safety needs of hospitalized patients. Prerequisite: sophomore standing in nursing. 3 lectures, 6 hrs. lab. <Fall>

202L. Determinants of Patient Care. (5) Crenshaw
Study of the patient, including his family, with focus on attitudes toward health and illness, patient and family resources and environment, sick role, and problems of illness. Prerequisite: 201L. 3 lectures, 6 hrs. lab. <Spring>

303. Medical-Surgical Nursing. (4) Oseasohn
The acquisition and application of theoretical content that is basic to the care of adult patients with medical and surgical conditions. Study includes the natural history, pathophysiology, and factors which influence illness and recovery from illness. Prerequisite: junior standing in the College of Nursing; corequisite: 304L. <Fall, Spring>

304L. Medical-Surgical Nursing Laboratory. (6) Oseasohn
The application of knowledge and skills learned in 303 in a clinical setting. Prerequisite: junior standing in the College of Nursing; corequisite: 303. 18 hrs. lab. <Fall, Spring>

320. Pediatric Nursing. (2) Ferketich
A study of the principles of growth and development from birth through adolescence which guide the nursing care of children at home, in the hospital and in the community. Includes a survey of the major health problems which occur during childhood. Prerequisites: junior standing in the College of Nursing; completion of lower division requirements; pre- or corequisite: Psych 320; corequisite: 321L. <Fall, Spring>

321L. Pediatric Nursing Laboratory. (3) Ferketich
Clinical practice in selected facilities to increase skill in the use of nursing process in assessing, planning and implementing the nursing care necessary to meet the needs of the child and his family. Prerequisite: completion of lower division requirements; corequisite: 320. 9 hrs. lab. <Fall, Spring>

330. Maternity Nursing. (3) Bear
A family-centered approach to the study of human reproduction, pregnancy, birth and infancy. Includes a study of gynecological nursing. Prerequisite: completion of lower division requirements as stated under nursing curriculum; corequisite: 331L. <Fall, Spring>

331L. Maternity Nursing Laboratory. (3) Bear
Clinical practice in selected facilities to increase skill in the use of the nursing process in assessing, planning and implementing the nursing care necessary to meet the needs of the childbearing family. Prerequisite: completion of lower division requirements as stated under nursing curriculum; corequisite: 330. 9 hrs. lab. <Fall, Spring>

351. Psycho-Cultural Aspects of Nursing. (2) Maurin
Study of psychological and cultural differences as they relate to nursing care of patients; further development of sensitivity to people. <Fall, Spring>

352. Fundamentals of Community Health Nursing. [Fundamentals of Public Health Science] (2)
An introduction to some of the fundamentals of community health nursing which includes levels of prevention and health maintenance, principles and methodology of the epidemiology of disease, vital statistics, and health of the environment. Some field assignments. Prerequisites: Biol. 233L or 393L; junior standing in the College of Nursing. <Fall, Spring>

450. [451L] **Psychiatric Nursing.** (3) Hicks
Principles and practice of nursing care of patients with psychiatric disorders; interpersonal, physiological, emotional, cultural factors. Prevention and treatment of mental illness; learning experiences in hospital and community agencies. Prerequisite: senior standing in the College of Nursing; corequisite: 451L. <Fall, Spring>

451L. Psychiatric Nursing Laboratory. (4)
Clinical practice in selected facilities for application of knowledge and skills learned in 450. Corequisite: 450.

452. [452L] **Community Health Nursing.** (4) Baca
This is a culminating experience for the senior student where theory and practice are designed to introduce him to nursing in the community in a variety of settings. Assignments provide an opportunity to apply the philosophy of comprehensive family-centered nursing through health teaching and guidance; survey of and projects in the community; interaction with a variety of community agencies. Prerequisite: senior standing in the College of Nursing; corequisite 453L. <Fall, Spring>

453L. Community Health Nursing Laboratory. (5)
Clinical practice in selected facilities for application of knowledge and skills learned in 452. Corequisite: 452.

462. Nursing Seminar. (5) Moore
Content is selected by students and instructor from current issues and trends in or involving nursing, primarily presented for discussion by students and guest speakers. Some subjects to be included are: (a) nursing organization, (b) state and federal legislation, (c) selected aspects of service and education, (d) research utilization, (e) consultation, and (f) significant social issues. Prerequisite: completion of all 300-level nursing courses. <Fall, Spring>

463. [463L] Senior Nursing Practicum. [Nursing Practicum] **(3)**
Discussion of the types of organizational systems is held in a seminar setting. Emphasis is placed upon group dynamics and leadership abilities as they apply to the practice of nursing. This course assists the student in understanding and assuming the role and responsibilities of a graduate nurse. Prerequisite: completion of all 300 level nursing courses; corequisite: 464L. <Fall, Spring>

464L. Senior Nursing Practicum Laboratory. (3)
Clinical practice in selected facilities for application of knowledge and skills learned in 463. Corequisite: 463.

497. Independent Study. (1-3)
Prerequisites: senior 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; 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 (Geology), Chairman; J. S. Findley (Biology), F. C. Hibben (Anthropology), L. D. Potter (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 266F, 303L, 307L
Biol 121L, 122L, 363L, 371L, 372L, 393L, 407, 408, 484L, 487L, 489L
Chem 101L, 102L or 122L, 253L, 301, 302, 303L, 304L; 311, 312
Geol 101-102-105L-106L, 201L, 302L, 421L, 431L, 441L, 501L
Math 241, 242, 441

GRADUATE MINOR

Requirements are listed in the **Graduate School Bulletin.**

209. The Earth Environment. (3) Anderson, Clark
(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. Prerequisite: permission of instructor. <Spring>

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. <Fall 1973 and alternate years>

***551-552. Problems.** (2-3 hrs. each semester)

PHARMACY

PROFESSORS C. A. Bliss (Dean), W. C. Fiedler, K. H. Stahl; ASSISTANT PROFESSORS W. J. Baker, D. F. Calvert, D. A. Hurwitz, J. W. Levchuk, R. E. Keesee, N. R. Strahl; INSTRUCTOR H. L. Bober; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

CURRICULUM

See p. 279.

231. 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>

232. Socio-Economics of Health Care Delivery. (3) Levchuk, Calvert, Bober
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: 231. <Spring>

234. History of Pharmacy. (2) Fiedler
The historical development of pharmacy as a profession. Prerequisite: enrollment in the first professional year. <Spring>

236. O.T.C. Drugs and Products. (2) Keesee
Discussion of the non-prescription drugs and products found in a pharmacy, with emphasis placed on antacids, sleep-aids, antihistamines, nasal decongestants, antitussives, internal analgesics, external analgesics, laxatives, vitamins, dentifrices, and anthelmintics. Prerequisite: 231. <Spring>

276. Principles of Pharmacology. (3) Hurwitz
The actions of drugs on living tissue and the basis upon which drugs are classified for their therapeutic usefulness. Includes the subdivisions of pharmacology: pharmacodynamics, posology, toxicology, and pharmacy. Prerequisites: Chem 281; pre- or corequisites: Biol 136-139L or 236L. (Open only to students in the College of Nursing and in the Dental Hygiene Program.) <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: 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) Fiedler
A continuation of 341L. Prerequisites: 341L, 343. 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, Spring>

345. Clinical Pharmacy I. (2) Calvert
An introduction to disease processes and medical terminology as related to drug therapy in community and institutional settings. Prerequisite: completion of first professional year or permission of instructor. <Fall>

346L. Clinical Pharmacy II. (3) Calvert
Introduction to patient interviewing; training in the methods of interviewing patients for the purpose of obtaining the patient's medical symptoms, drug use history, and explaining to the patient, at the community or institutional level, the different aspects of his/her personal drug therapy. Prerequisite: 345 or permission of instructor. 2 lectures, 3 hrs. lab. <Spring>

374. Pharmacology I. (2) Hurwitz
A study of the effects produced by drugs and the mechanisms whereby these effects are produced. Includes the sub-divisions of pharmacology: posology, toxicology, biometrics, pharmacogenetics, drug interactions and chemotherapeutics. Prerequisite: Biol 430L. <Spring>

380. Animal Health. (1) Day
An introduction to animal husbandry and animal health problems. The interrelationship of pharmacy and veterinary medicine and the social and economic relationships between men and animals. Prerequisite: third-year standing. <Spring>

412L. Radiopharmacy. (4) Keesee
A 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, Spring>

416. In-Vitro Studies. (2) Baker
A study of the basic principles of radioimmunoassay, competitive binding analysis and related clinical laboratory tests utilizing radio-nuclides; effects of drug therapy on the various parameters being measured is stressed. Prerequisites: Chem 324, Biol 430L, or permission of instructor. <Spring>

421. Pharmacy Accounting and Financial Management. (3) Bober
Principles and practices involved in basic accounting, the keeping of pharmacy records, financial analysis, and the interpretation of financial reports applicable to community pharmacy. Prerequisite: 231 or permission of instructor. <Fall>

422. Pharmacy Law. (3) Bober
Laws and regulations relative 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. <Spring>

423. Pharmacy Management. (3) Bober
Management activities involved in the organization, control, and operation of retail pharmacies. Prerequisite: 421. <Fall>

425. Seminar in Pharmacy Administration. (2) Bober
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: 231 or permission of instructor. <Fall>

426. Pharmaceutical Marketing. (3) Bober
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: 231 or permission of instructor. <Spring>

443L. Operative Pharmacy I. (5) Strahl
A survey of the preparations of Pharmacy; the applications of physical principles to compounding and the manufacture of preparations; technology of pharmacy. Prerequisites: 341L, 361, 372L. 3 lectures, 6 hrs. lab. <Fall> **NOTE: This course offered only Fall, 1972, for students who have completed the second professional year under the 1971-72 program.**

443L. Physical Pharmacy. (4) Strahl
A continuation of 342L with emphasis on the application of physico-chemical principles to the study of pharmaceutical dosage forms and the technology involved in this formulation. Prerequisite: 342L. 3 lectures, 3 hrs. lab. <Fall> **NOTE: This course offered effective Fall 1973.**

444L. Operative Pharmacy II. (5) Strahl
A continuation of 443L. Prerequisite: 443L. 3 lectures, 6 hrs. lab. <Spring> **NOTE: This course offered only Spring, 1973.**

444. Biopharmaceutics. (4) Strahl
An introduction to the relationship of the physical aspects of drug formulation to drug absorption. Elements of drug metabolism, accumulation and elimination are also discussed. Prerequisite: 443L. 3 lectures, 1 seminar. <Spring> **NOTE: This course offered effective Spring, 1974.**

445L. Clinical Pharmacy III. (4) Calvert
A directed experience working with patients, pharmacists, and other health professionals, designed to acquaint the prospective pharmacist with the functions and methods of members of the health team. Prerequisite: 346L or permission of instructor. <Fall>

446L. Clinical Pharmacy IV. (3) Calvert
A directed experience, with the student working at a basic level as a member of the health team in a controlled environment. Prerequisite: 445L or permission of instructor. <Spring>

447L. Dispensing Pharmacy I. (5) Keesee
Dispensing pharmacy is broadly defined as the translation of the sciences underlying pharmacy into the art of pharmacy. More specifically it is the application of the scientific and practical knowledge upon which the practice of pharmacy is based to the extemporaneous compounding of drugs and medicines and making these available under proper control. Prerequisites: 444L, Phmcol 476L. 3 lectures, 6 hrs. lab. <Fall>

448L. Dispensing Pharmacy II. (5) Calvert
A continuation of 447L. 3 lectures, 2 hrs. seminar. Prerequisite: 447L. <Spring>

451. Institutional Pharmacy Practice. (3) Levchuk
A study of the characteristics of modern patient care programs in an institutional setting. Principles and techniques for providing comprehensive pharmaceutical services in hospitals, with emphasis on hospital pharmacy administration. A series of optional visitations to hospitals, nursing homes and other health care facilities provided. Prerequisite: 4th year pharmacy standing. 3 lectures, 3 hrs. optional visitation. <Fall>

453. Seminar in Hospital Pharmacy Administration. (2) Levchuk
A study of administrative problems and current concepts affecting hospital pharmacy practice, using the case study approach. Prerequisite: 451. 2 hrs. seminar. <Fall>

456. Drug Literature Evaluation and Information Handling. (3) Levchuk
Methods and techniques for drug information handling, its effective utilization in rational drug therapy, specialized clinically applicable drug information services; scope and use of drug literature, objective approach to literature searching, basic computer concepts, clinical drug studies, and drug literature evaluation. Prerequisite: 476L. 2 lectures, 2 hrs. seminar. <Spring>

463. Organic Pharmaceutical Chemistry I. (3) Stahl
A study, from the chemical viewpoint, of organic substances used in pharmacy and medicine. Prerequisite: Chem 324. <Fall>

464. Organic Pharmaceutical Chemistry II. (3) Stahl
A continuation of 463. Prerequisite: 463. <Spring>

465L. Organic Pharmaceutical Chemistry Laboratory I. (2) Stahl
The synthesis and analysis of representative organic compounds used as drugs. Prerequisite: Chem 253L; pre- or corequisite: 463. 6 hrs. lab. <Fall>

466L. Organic Pharmaceutical Chemistry Laboratory II. (2) Stahl
The synthesis and analysis of representative organic compounds used as drugs. Prerequisite: Chem 253L; pre- or corequisite: 464. 6 hrs. lab. <Spring>

475L. Pharmacology I. (4) Hurwitz
A study of the effects produced by drugs and the mechanisms whereby these effects are produced. Includes the subdivisions of pharmacology, materia medica, therapeutics, posology, toxicology, and biometrics. The actions of the more important drugs are demonstrated upon living animals. Prerequisites: Chem 324; Biol 429L, 430L. 3 lectures, 3 hrs. lab. <Fall> **NOTE: This course offered only Fall, 1972, for those students who have completed the second professional year under the 1971-72 program.**

475L. Pharmacology II. (5) Hurwitz
A continuation of 374. Coverage includes drugs affecting the nervous system, cardiovascular agents, stimulants and depressants. The actions of the more important drugs are demonstrated upon living animals. Prerequisite: 374. 4 lectures, 3 hrs. lab. <Fall> **NOTE: This course offered effective Fall, 1973.**

476L. Pharmacology II. (5) Hurwitz
A continuation of 475L. Prerequisite: 475L. 4 lectures, 3 hrs. lab. <Spring> **NOTE: This course offered only Spring, 1973 for those students who have completed the second professional year under the 1971-72 program.**

476L. Pharmacology III. (4) Hurwitz
A continuation of 475L. Prerequisite: 475L. 3 lectures, 3 hrs. lab. <Spring> **NOTE: This course offered effective Spring, 1974.**

477. Pharmacology III. (3) Hurwitz
Agents used locally or systemically for the prevention or treatment of microbial and parasitic infections; immunological products, antibacterial, antiviral, antiprotozoal, and antifungal drugs, as well as those used in helminth diseases. Prerequisite: 476L. <Fall>
NOTE: This course offered only Fall, 1972, and Fall, 1973, for those students who have completed the third professional year under the 1971-72 program.

479. Psychopharmacology. (1) Hurwitz
A study of the tranquilizers, antidepressants and psychedelic drugs. The methodology of psychopharmacologic research is emphasized. Prerequisite: 476L. <Fall>

482. Drug Education. (2) Levchuk
Introduction to drug action, drug use and misuse, drug regulatory standards, the role of drugs in modern society, and solution possibilities for drug-related problems. The course is designed for those particularly interested in drug education programs and methodologies in schools and communities. <Spring>

497. Pharmacy Problems. (1-5)††
Experimental and library problems in some phase of pharmacy, pharmacology, pharmacognosy, pharmaceutical chemistry, pharmacy administration, institutional pharmacy, clinical pharmacy or radiopharmacy. Prerequisite: permission of instructor. <Fall>

498. Pharmacy Problems. (1-5)††
Experimental and library problems in some phase of pharmacy, pharmacology, pharmacognosy, pharmaceutical chemistry, pharmacy administration, institutional pharmacy, clinical pharmacy or radiopharmacy. Prerequisite: permission of instructor. <Spring>

PHILOSOPHY

PROFESSORS P. Schmidt[2,6] (Chairman), H. Alexander, A. Bahm, M. Evans; ASSOCIATE PROFESSORS C. McDermott, H. Tuttle; ASSISTANT PROFESSORS M. Casalis, R. Goodman, D. Lee, B. O'Neil (Acting Chairman), F. Schueler, C. Stern.

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 pre-professional major (for example, pre-law, pre-theological or even pre-medical); (3) as an inter-disciplinary 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. 296.

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, 3 hours; 358, 3 hours; 441 and 442, 6 hours; one course taken from 354, 356, 385, 3 hours; and one course taken from 365, 367, 380, 445, 455, 465, 470, 3 hours.

MINOR STUDY

15 hours in courses numbered 200 and above.

DEPARTMENTAL HONORS

Consult department adviser.

PERIOD MINOR

For requirements, see Comparative Literature, p. 335.

100. Introduction to Philosophical Problems. (3)
Selected problems in values, knowledge and reality. Social, political and religious philosophy. <Summer, Fall, Spring>

101-102. Humanities. (3, 3)
Introduction to comparative religions, philosophies, and arts. <101-Fall, 102-Spring>

145. Thought and Expression. (3)
Processes of communicating, symbolizing, thinking abstractly, imagining, generalizing, defining and inferring. <Fall, Spring>

201. Ancient European Philosophy. (3)
An historical study; especially of Greek philosophy. <Summer, Fall, Spring>

202. Modern European Philosophy. (3)
An historical study from the Renaissance through Kant. <Summer, Fall, Spring>

255. Scientific Method. (3)
Meaning and verification, scientific truth, hypotheses, models, empirical evidence, measurement, induction and probability, statistical knowledge. <Fall>

256. Introduction to Logic. (3)
Fallacies of argument; traditional forms of deductive and inductive inference. <Summer, Fall, Spring>

263-264. Comparative Religions. (3, 3)
Introduction to the world's religions. 263: Eastern religions; 264: Western religions. <263-Fall, 264-Spring>

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 Chairman.

***303. Hellenistic Philosophy.** (3)
Stoicism to Neoplatonism. <Offered upon demand>

***304.** [303] **Medieval European Philosophy.** (3)
Major thinkers from Augustine through Ockham. <Fall>

***323. Hispanic and Latin-American Philosophy.** (3)
Major movements and trends. <Fall 1972 and alternate years>

***332. North American Philosophy.** (3)
Early developments, idealism, pragmatism, naturalism, realism, and analysis. <Spring>

***334. Indian Philosophy.** (3)
Upanishads, Bhagavad-gita, Jainism, Buddhism, the six Hindu systems, and recent developments. <Fall>

***336. Chinese Philosophy.** (3)
Confucian, Taoist, Mohist, Legalist schools and their influence on Buddhist and modern developments. <Offered upon demand>

***344. Recent Philosophy.** (3)
From Kant to Twentieth Century. <Fall>

***346. Contemporary Philosophy.** (3)†
Twentieth Century philosophies. <Fall, Spring>

***348. Comparative Philosophy.** (3)
Examination of conflicting ideals and presuppositions of Hindu, Chinese and Western philosophies. Prerequisite: acquaintance with the history of Hindu, Chinese, and Western philosophies. <Summer, Spring>

***352. Theory of Knowledge.** (3)
Problems and theories of epistemology. <Offered upon demand>

***354. Metaphysics.** [Metaphysics, Ontology and Cosmology] (3)
Theories of reality. <Fall>

***355. Cosmology.** (3)
Theories of origin and nature of universe. <Offered upon demand>

***356-357. Symbolic Logic.** (3, 3)
Methods and techniques of modern logic. <356-Fall, 357-Spring>

***358. Ethical Theory.** (3)
Inquiry concerning goodness, rightness, obligation, justice and freedom. <Summer, Fall>

***365. Philosophy of Religion.** (3)
Inquiry into the nature of religion. <Summer, Fall>

***367. Philosophy of Art and Aesthetics.** (3)
Concepts and theories about aesthetic experience and judgment; artistic meaning and evaluation. <Spring>

***371. Classical Social and Political Philosophy.** (3) Lee
From Plato to Hobbes. <Fall>

***372. Modern Social and Political Philosophy.** (3) Lee
From Hobbes to Marcuse. <Spring>

***380. Philosophy of Law and Morals.** (3)
Nature and function of public law and its relation to moral belief. <Fall>

***385. Philosophy of Mind.** [Philosophy of Mind and Knowledge] (3)
A study of certain issues connected with the nature and status of minds. <Fall>

***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. <Summer, Fall, Spring>

***442. Individual Philosophers.** (3)‡
Figure varies. <Summer, Fall, Spring>

***445. Philosophy of Language.** (3)
Philosophies of meaning with special attention to the relations between language and thought. Prerequisite: 145 or permission of instructor. <Fall>

***455. Philosophy of the Natural Sciences.** (3)
Critical examination of methods and concepts of the natural sciences. <Spring>

***465. Philosophy of the Social Sciences.** (3)
Examination of the structure, methods and presuppositions of social sciences. <Fall>

***470. Philosophy of History.** (3)
(Also offered as Hist 470.) Nature, structure and presuppositions of theories of history and historical methods. <Spring>

***480. Philosophy and Literature.** (3)
(See Eng-Ph 480.) Prerequisites: 6 hours of literature and 3 hours of philosophy from the courses specified as requirements for the program. <Spring>

***485. Philosophical Foundations of Economic Theory.** (3))
(See Ec-Ph 485.) Prerequisite: Econ 201. <Spring 1973 and alternate years>

497. Honors Seminar. (3)†
For departmental honors in philosophy. <Offered upon demand>

498. Reading and Research. (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.)

***526. Seminar in Asian Philosophers.** (3)‡ <Offered upon demand>

***541. Seminar in Philosophical Movements.** (3)‡ <Fall, Spring>

***542. Seminar in Individual Philosophers.** (3)‡ <Fall, Spring>

***551. M.A. Problems.** (1-3 hrs. per semester)‡

***599. M.A. 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) <Fall 1972 and alternate years>

***655. Ph.D. Seminar in Epistemology.** (3) <Fall 1973 and alternate years>

***656. Ph.D. Seminar in Logical Theory.** (3) <Spring 1974 and alternate years>

***658. Ph.D. Seminar in Value Theory.** (3) <Spring 1973 and alternate years>

***699. Dissertation.** (3-9 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 (Chairman), C. L. Beckel, H. C. Bryant, C. Dean, J. R. Green, J. L. Howarth, C. P. Leavitt, R. Thomas; ASSOCIATE PROFESSORS H. S. Ahluwalia, S. S. Alpert, D. S. King, A. W. Peterson, D. B. Swinson; ASSISTANT PROFESSORS C. Chandler, B. D. Dieterle, J. D. Finley III, David M. Wolfe; ADJUNCT PROFESSOR J. W. Evans; LECTURERS C. L. Hyder, M. Shafi.

Explanation of footnotes not indicated will be found on p. 296.

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. 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.

MAJOR STUDY IN PHYSICS

Physcs 301, 302, 303, 304, 305, 306, 307L, 308L; Math 311, 312, or 361, 362; Chem 101L, 102L.

MINOR STUDY IN PHYSICS

Four courses selected from Physcs 301, 302, 303, 304, 305, 306; Math 311 or 361.

MAJOR STUDY IN ASTROPHYSICS

Physcs 301, 302, 303, 304, 305; Astr 270, 271, three Astronomy courses numbered above 299; Math 311 or 361.

MINOR STUDY IN ASTROPHYSICS

Physcs 302; Astr 270, 271, one Astronomy course numbered above 299; Math 311 or 361.

§ Not required for the minor study in Astrophysics.

GRADUATE STUDY

Prerequisite for all courses numbered 500 and above: an undergraduate major in Physics equivalent to that outlined above.

PHYSICS

102. Introduction to Physics. (3) Howarth, Regener
An elementary course, primarily for non-science majors, including demonstrations. <Summer, Fall, Spring>

103. Meteorology. (3) Dean
Introduction to the physics of the atmosphere. Primarily for non-science majors. Weather analysis and forecasting, topics in air pollution. <Fall, Spring>

104. Introduction to Environmental Physics. (3) Hyder
An elementary course addressed to the physical aspects of environmental problems. <Offered upon demand>

105L. Introduction to Physics. (4) Howarth
An elementary course, primarily for non-science majors, including demonstrations and laboratory work.

108. Introduction to Musical Acoustics. (3) Dean
An elementary course on the physics of musical sounds and instruments. Primarily for non-science majors. <Fall, Spring>

151. General Physics. (3)
Mechanics, sound, heat. The sequence 151, 152, 153L, 154L is required of premedical, predental, and preoptometry 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 and magnetism, optics. Prerequisite: 151. <Summer, Fall, Spring>

153L. General Physics Laboratory. (1)
Mechanics, sound, heat. Pre- or corequisite: 151. 3 hrs. lab. <Summer, Fall, Spring>

154L. General Physics Laboratory. (1)
Electricity, magnetism, optics. Pre- or corequisite: 152. 3 hrs. lab. <Summer, 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 151 or 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. <Summer, 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. <Summer, 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. Pre- or corequisite: Math 311. <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. Pre- or corequisite: Math 311. <Spring>

****303-304. Analytical Mechanics.** (3, 3) Bryant, Dean, Green, Leavitt, Thomas
Statics and dynamics of particles and rigid bodies; introduction to Lagrange's method. Pre- or corequisites: Math 311, 312. <303-Fall, 304-Spring>

****305-306. Electricity and Magnetism.** (3, 3) Alpert, Beckel, Bryant, Dean, Dieterle, Green, Howarth, Thomas
Electrostatic and electro-magnetic field theory. Direct and alternating current circuit theory. Pre- or corequisites: Math 311, 312. <305-Fall, 306-Spring>

****307L-308L. Junior Laboratory. (2,2)** Alpert, Bryant, Dieterle, Regener
Heat, electricity, electronics, optics. 1 lecture, 3 hrs. lab. each semester. <307L-Fall, 308L-Spring>

****330. Atomic and Nuclear Physics. (3)** Alpert, Bryant, Dean, Dieterle, Green, Leavitt, Shafi, 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
Sound waves, radiation, and scattering; audio-frequency applications; acoustical properties of matter. <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>

***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>

***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, Dean, Finley, Thomas
A selection of mathematical methods applied to physics. <Spring>

***491-492. Contemporary Physics. (3, 3)** Bryant, Dean, Dieterle, Green, Leavitt, Regener, Swinson
Theory of special relativity, introduction to 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 artifical radioactivity; cosmic rays. 6 hrs. lab. <Fall>

***500. Advanced Seminar. (1-3)** <Fall, Spring>

***503. Classical Mechanics I. (3)** Chandler, Green, Thomas
Lagrangean dynamics, rigid bodies, oscillations, continuous systems. <Fall 1972 and alternate years>

***504. Classical Mechanics II. (3)** Chandler, Thomas
Hamiltonian dynamics, canonical transformations, Hamilton-Jacobi theory, applications of mechanics. <Spring 1973 and alternate years>

***505. Statistical Mechanics and Thermodynamics. (3)** Thomas
Classical and quantum statistics with applications to molecules and elementary particles. <Spring>

***511. Electrodynamics I.** (3) Alpert, Green, Thomas
Electrostatics, Maxwellian theory of fields, classical theory of radiation. <Fall 1973 and alternate years>

***512. Electrodynamics II.** (3) Green, Thomas
Covariant form of field equations, classical theory of charged particles. <Spring 1974 and alternate years>

***521. Quantum Mechanics I.** (3) Alpert, Finley, Thomas
Experimental foundation, Schrödinger equation, operator formulation, approximation methods. <Spring>

***522. Quantum Mechanics II.** (3) Finley, Thomas
Many electron system, semiclassical theory of radiation, high and low energy potential and resonant scattering. Dirac electron theory. <Fall>

***523. Quantum Mechanics III.** (3) Thomas
Scattering of spin one-half particles, selection rules, polarization analysis, second quantization of the radiation field. <Spring 1974 and alternate years>

***524. Quantum Mechanics IV.** (3) Thomas
Classical fields of scalar quanta, relativistic wave equations, quantum theory of fields. <Fall 1972 and alternate years>

***530. Selected Topics in Solid State Physics.** (3)‡ Dean
Structure and properties of crystal lattices, insulators and electronic conductors, semiconductors. Prerequisite: 521. <Offered upon demand>

***531. Atomic Structure.** (3) Beckel
Hydrogen atom, complex atoms, methods of calculating atomic properties. Prerequisite: 521. <Offered upon demand>

***532. Molecular Structure.** (3) Beckel
Rotational, vibrational, and electronic properties of simple molecules. Prerequisite: 531. <Offered upon demand>

***534. Selected Topics in Biophysics.** (3)‡ Howarth
Biological and medical applications of physical principles and methods, aspects of radiation dosimetry and radiological physics, physical aspects of radiobiology, the physics of perception. <Offered upon demand>

***537. Selected Topics in Space Physics.** (3)‡ Ahluwalia, Leavitt
(Also offered as Astr 537.) Particles and fields in space; plasmas and magnetic fields, trapped radiation, solar effects, acceleration mechanisms, origins and composition of galactic radiation, experimental techniques. <Offered upon demand>

***539. Selected Topics in Laser Physics.** (3)‡ Alpert
Principles of lasing systems, transition probabilities, spectral line shapes, optical cavity mode structure, rate equations, coherence, giant pulse techniques, nonlinear phenomena. Prerequisites: 302 and 521. <Offered upon demand>

***540. Introduction to Nuclear Physics.** (3) Leavitt
Nuclear characteristics, radioactive decay, kinematics and conservation laws, interaction with matter, detection methods, scattering measurement, mesons and high-energy experiments, fission. <Offered upon demand>

***542. Selected Topics in Theoretical Nuclear Physics.** (3) Finley
Properties of nuclei, decay processes, nuclear reactions, two-nucleon problem, nuclear models. Prerequisites: 521, 540. <Offered upon demand>

***543. Selected Topics in High-Energy Physics.** (3)‡ Chandler, Finley, Leavitt
S-matrix theory, field theory, symmetries, weak interactions, electromagnetic interactions, hadron resonances. Prerequisite: 521. <Offered upon demand>

***551-552. Problems.** (1-4 hrs. each semester)

***566. Advanced Methods of Theoretical Physics.** (3)‡ Beckel, Thomas <Offered upon demand>

***570. Theory of Relativity.** (3) Finley
Special relativity, tensor analysis and Riemannian geometry, selected topics in general relativity. 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. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

ASTRONOMY

101. Introduction to Astronomy. (3) Hyder, King, Peterson
An elementary course, primarily for non-science majors, including observations with the telescope. <Fall, Spring>

111L. Introductory Astronomy Laboratory. (1)
Observations in astronomy. Pre- or corequisite: 101. <Fall, Spring>

270-271. General Astronomy. (3, 3) King, Peterson
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) King, Peterson
Observation of the moon, planets, and stars. Pre- or corequisite: 270-271. 3 hrs. lab. <272L-Fall, 273L-Spring>

***311-312. Research Methods. (1, 1)** Hyder, King, Peterson

***421. Introduction to Astrophysics. (3)** King
Observational results, radiation laws, absorption and emission of radiation, simple applications to a variety of astrophysical problems. <Fall>

***422. Planetary Physics. (3)** Peterson
The planetary systems, planetary atmospheres. <Offered upon demand>

***423. Solar Physics. (3)** Hyder
The sun as a star, photosphere, chromosphere, corona, solar activity, solar emission of matter and radiation, experimental techniques. Prerequisite: 421. <Offered upon demand>

***424. Stellar Structure. (3)** King
Chemical composition, temperature, energy sources of the stars. Prerequisite: 421. <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>

***426. Dynamical Systems in Astronomy. (3)** King
Principles of celestial mechanics, planetary systems and satellite orbits, binary and multiple stars, clusters, structure and evolution of galaxies. Prerequisites: Physcs 303-304. <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) Particles and fields in space; plasmas and magnetic fields, trapped radiation, solar effects, acceleration mechanisms, origins and composition of galactic radiation, experimental techniques. <Offered upon demand>

POLITICAL SCIENCE

PROFESSORS M. Gehlen (Chairman), C. F. Heady, E. C. Hoyt, M. C. Needler, A. H. Rosenthal, J. B. Sorenson; ASSOCIATE PROFESSORS H. V. Rhodes[1], R. J. Sickels, H. P. Stumpf; ASSISTANT PROFESSORS B. Ames, W. J. Brisk[4], R. Cruikshanks, J. Ehrenberg, C. Garcia, P. L. Hain, R. D. Wrinkle; and new appointments to be made.

MAJOR STUDY

A total of 33 hours is required for a major in Political Science. A major must include 9 hours of the core courses (200, 220, 240, and 260). No more than 12 hours of 100- and 200-level courses 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 Departmental Chairman, a major may offer an American Studies minor as well as a minor in a single department. For requirements, see American Studies.

I. INTRODUCTORY COURSES FOR FRESHMEN

100. Man and Politics. (3)
Treatment of contemporary political issues at the local, national, and international levels in terms of the light shed upon them by the political science discipline. (Students who have already had courses in political science may not count 100 toward a major.)

II. CORE LOWER DIVISION COURSES

200. [100] **American Politics.** [American Government] (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. [102] **Comparative Politics.** [Introduction to 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>

240. [203] **International Politics.** [International Politics: Basic Factors] (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>

260. Political Theory. (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>

III. 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. (Students are urged in September to notify the department of their suggestions.) <Spring>

***301. Urban Politics.** [Municipal Government and Politics] (3) Wrinkle
An analysis of the politics of urban areas with emphasis on the major metropolitan areas of the U.S. Prerequisite: 200. <Fall>

***302. Comparative State Politics.** [State Government in the United States] **(3)** Wrinkle
Analysis of the similarities and variations of American state politics with emphasis on policy outputs. Prerequisite: 200. <Spring>

***304. The Government of New Mexico.** **(3)**
Prerequisite: 200.

***305. Public Opinion.** **(3)** Garcia
Public opinion, its content and measurement, and its relation to public policy. <Fall>

***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. with special emphasis on the political status and activity of Afro-American, Mexican-American, and Native American. <Spring>

***308. Politics in Action.** **(3)** Rhodes
Current political action: local campaigns, primaries, legislative programs, lobbying. Prerequisite: 200.

***310.** [410] **The Policy-Making Process.** **(3)**
The political interactions of interest groups, administrative agencies, executives, and legislative bodies in the formulation of policy in field chosen by instructor. Prerequisite: 200. <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. <Fall>

***342. American Foreign Policy.** **(3)** Hoyt, Sorenson
Prerequisite: 240. <Fall>

***350. Public Finance.** **(3)** Boyle
(Also offered as Econ 350.) Taxation, government borrowing, financial administration, and public expenditures. Prerequisite: Econ 201.

***351. Comparative Politics: Developing Countries.** **(3)** Brisk, Cruikshanks <Spring>

352. African Politics. **(3)** Criddle
(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. Governments and Politics of Latin America.** **(3)** Needler
The political dynamics of the Latin American republics in the context of political development. Recommended preparation: Hist 282. <Fall>

***356. Governments and Politics of Latin America.** **(3)** Ames, Brisk
Contemporary political problems of Latin America, with emphasis on the problem of revolution and the politics of nationalism, communism, and the non-Communist radical left. <Spring>

***357. Government and Politics of the Soviet Union I.** **(3)** Gehlen, 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)** Ehrenberg, Rhodes
Prerequisite: 200 or 260 recommended. <Fall>

***362. Modern Political Theory.** **(3)** Ehrenberg, Rhodes
Prerequisite: 200 or 260 recommended. <Spring>

***363. Latin American Political Theory.** **(3)** Brisk
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. Law and Politics I.** **(3)** Stumpf
The nature of the judicial process and the role of law and courts in the American political system, with emphasis on the United States Supreme Court. Prerequisite: 200 or consent of instructor. <Fall>

***380. Political Socialization.** (3) Garcia, Sickels
Analysis of the development of political attitudes in children and adults. Prerequisite: 200. <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>

***421. Public Administration.** (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. <Fall, Spring>

***422. The Administrative Process.** (3) Hunger
(Also offered as Pub Ad 422.) Using the case-study approach, examines concepts, issues, and methods of solving problems involved in the actual administration of public policy at all levels of government. Prerequisite: 421 or comparable experience. <Offered upon demand>

***425. Public Personnel Administration.** (3) Rosenthal
(Also offered as Pub Ad 425.) Examines concepts involved in the local, state, and federal levels, including considerations of motivation, behavior, and employee organizations. Prerequisite: 421. <Offered upon demand>

***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)
Contemporary problems of international politics considered on a regional basis; foreign policies of the United States and other powers. Prerequisite: 240.

***443. International Law and Organization.** (3) Hoyt
Prerequisite: 240. <Spring>

***445. Inter-American Relations.** (3) Brisk
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.** [Politics and Governments of Modern Asia] (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>

***457. Government and Politics of the Soviet Union II.** (3)
Contemporary political problems of the Soviet Union, with emphasis on tensions and accommodations between political leadership and socio-economic forces. Prerequisite: 357 or permission of instructor. <Offered upon demand>

***459. Soviet Foreign Policies.** (3) Gehlen, 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, Arch, and Soc 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. Comparative Politics: The Industrial Democracies.** (3) Cruikshanks
Ordinarily, an examination of themes common to the political systems of Western Europe, North America, and Japan. Recommended preparation: 220 or permission of instructor. <Offered upon demand>

***470. Environmental Politics.** (3) Hoyt
A study of political problems of environmental protection and land use planning. Research paper required.

***475. Law and Politics II.** (3) Stumpf
Prerequisite: 375 or permission of instructor. <Spring>

***476. Civil Rights.** (3) Sickels
<Offered upon demand>

***477. The Indian and the Law.** (3) Deloria
Introduction to Indian legal status. <Fall>

***480. Survey of Political Science as a Discipline and a Profession.** (3)
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.) <Fall>

***490. Research Techniques.** (3) Cruikshanks
A survey of methods employed by political scientists. Emphases include the formulation and specification of research problems, research design, data collection, and data analysis. No knowledge of mathematics or statistics is assumed in this course. <Fall>

499. Senior Thesis. (3)

IV. GRADUATE COURSES

***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>

***520. Pro-Seminar: Comparative Government and Politics.** (3) <Offered upon demand>

***521. Research Seminar in Comparative Government and Politics.** (3) <Offered upon demand>

***525. Pro-Seminar on Latin American Politics.** (3)
Survey of the major dimensions of Latin American politics, covering topics such as political development, the military, parties and pressure groups, through a study of the most important literature in the field. Previous work in the field is highly desirable, and a 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>

***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)**

***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)
This course is designed to help graduate students develop effective techniques for teaching political science at the undergraduate level. Experimental classroom techniques as well as conventional lecture and discussion methods are studied and evaluated. Prerequisite: graduate standing. <Fall>

***590. Advanced Research Techniques.** (3)
A detailed examination of basic data collection and manipulation strategies, including survey research, aggregate data analysis, content analysis and simulation. Knowledge of applied statistics is assumed. <Spring>

***599. Master's Thesis. (1-6 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

***699. Dissertation. (3-9 hrs. per semester)**
See the **Graduate School Bulletin** for total credit requirements.

PORTUGUESE

See Modern and Classical Languages.

PSYCHOLOGY

PROFESSORS F. A. Logan (Chairman), D. T. Benedetti, H. C. Ellis, G. R. Grice, R. D. Norman, J. M. Rhodes, S. Rosenblum; ASSOCIATE PROFESSORS D. P. Ferraro, P. J. Johnson, K. P. Koenig, L. E. Price, B. K. Ruebush; ASSISTANT PROFESSORS D. M. Feeney, T. P. Friden, J. P. Gluck, R. J. Harris, M. H. Irwin, P. D. Kottler, S. Roll.

AFFILIATED FACULTY: PROFESSOR L. M. Libo; ADJUNCT ASSOCIATE PROFESSOR A. Bruner; ASSISTANT PROFESSORS J. P. Cardillo, L. J. Miller, A. T. Quenk, D. K. Worden.

Explanation of footnotes not indicated will be found on p. 296.

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 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 or from any member of the Psychology faculty. **Acceptance of transferred credits toward a major or minor in Psychology must be approved by the department.**

MAJOR STUDY

The Psychology major is encouraged to broaden his 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 program and approved by his adviser.

The standard major requires 26 hours credit beyond 8 hours General Psychology. Within these, the B.A. degree requires either 200 or 201 and a laboratory course numbered above 300. The B.S. degree requires 201, 202, a laboratory course numbered above 300, and a minor in or distributed among Biology, Chemistry, Mathematics, or Physics. 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.

101. General Psychology I. (3) Price, Ferraro
An introduction to the areas of learning, motivation and comparative-physiological psychology. <Fall, Spring>

102. General Psychology II. (3) Norman, 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)
Laboratory projects relevant to topics covered in 102. Pre- or corequisite: 102. 2 hrs. lab. <Fall, Spring>

107. Introductory Psychology. (3)
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) Friden, Harris, Johnson
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 post-graduate study in any field are advised to take 201-202. <Summer, Fall, Spring>

201. Introduction to Probability and Statistics. (3)
(Also offered as Math 102.) An introduction to sampling and probability theory, descriptive and inferential statistics, including essential mathematical and computational details. Prerequisite: knowledge of algebra at high school level, such as provided by Math 020. <Summer, Fall, Spring>

202. Psychological Research Techniques. (2) Friden, Harris, Johnson
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) Rosenblum
An overview of the way in which psychological principles apply to the teaching-learning process. Heavy emphasis is on the pragmatic applications of learning theories to classroom procedures as well as on relevant research studies. Prerequisite: 101 or 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
Biological foundations of behavior with stress on the central nervous system. Effects of hormones, drugs, genetics and disease or injury as related to the brain, sensory functions and personal experience. Prerequisite: 101 or 102, or Biol 121L. <Fall>

260. Psychology of Learning. (3) Ellis
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. <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 1974 and alternate years>

***300. Intermediate Statistics.** (3) Friden, Harris, Johnson
Complex analysis of variance designs (factorial, mixed-model, Latin square, unequal-n) and nonparametric tests. Prerequisite: 200 or 201. <Spring 1973 and alternate years>

***320. Developmental Psychology.** (3) Rosenblum, Irwin
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) Price
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. Prerequisite: 101. <Spring>

***322L. Child Research Laboratory.** (2) Price
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. <Spring>

***331. Psychology of Personality.** (3) Koenig
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) Koenig
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
Biological foundations of behavior with stress on the central nervous system. Effects of hormones, drugs, genetics and disease or injury as related to the brain, sensory functions and personal experience. Prerequisites: 101 or 102 or Biol 121L, and permission of instructor. Credit cannot be received for both 240 and 340. <Fall>

***361. Learning: Human Skills.** (3) Johnson, Ellis
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 Skills 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>

***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) Irwin
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) Logan
Discussion of the history and systems of psychology and the philosophy of science, particularly as related to current topics in psychology. Prerequisite: 260 and permission of instructor; pre-or corequisite: 200 or 201. <Fall>

392. Junior Honors Seminar. (3) Logan
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)
Survey of mathematical descriptions of behavior. Prerequisite: 200 or 201. <Spring 1972 and alternate years>

***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: 300. <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 differences among humans. Prerequisite: 200 or 201. <Fall>

***412. Advanced Educational Psychology.** (3) 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. <Fall>

***413. Industrial Psychology.** (3)
Application of psychological principles to industrial needs. Prerequisite: 102. <Fall>

***414. Engineering Psychology.** (3)
Problems arising from man-machine relationships. Prerequisite: 102. <Spring>

***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>

***424. Learning, Motivation, and Perception in Children.** (3) Price
Analysis of theoretical and experimental literature on learning, motivation and perception in simple and complex situations with children. Prerequisite: 260. <Spring 1974 and alternate years>

***428. Cognitive Development.** (3) Johnson, Irwin
Research and theory concerning the development of conceptual, intellectual and linguistic behavior in children. Prerequisite: 101, 102, and 320. <Spring 1973 and alternate years>

***431. Psychology of Mental Retardation.** (3) Rosenblum
Theory and research dealing with various aspects of mental deficiency and retardation. Prerequisite: 102. <Fall>

***432. Child Clinical Psychology.** (3) Rosenblum
Theories and practices related to an understanding of children and adolescents who deviate from normal development either intellectually, educationally, emotionally, physically or in some combination. Relevant family variables are considered. Prerequisite: 102. <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. Advanced Physiological Psychology.** (3) Rhodes
Intensive examination of neurophysiological bases of behavior. Prerequisite: 240 or 340. <Spring>

***442L. Advanced Physiological Psychology Laboratory.** (2) Rhodes
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. Prerequisite: 230 or 260 and permission of instructor. <Spring>

***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. Prerquisite: 200 or 201; corequisite: 445. 4 hrs. lab. <Fall>

***450. Special Topics in Psychology. (1-3 hrs. each semester)††**
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 motivation. Prerequisite: 101. <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. Learning: Conceptual Processes.** (3) Johnson
Research and theory in the area of cognition with emphasis on conceptual behavior and attentional processes. The role of strategies in complex behavior is discussed. Prerequisite: 260. <Spring>

***464L. Conceptual Processes Laboratory.** (2) Johnson
Laboratory projects related to topics in 463. Prerequisite: 200 or 201; corequisite: 463. 4 hrs. lab. <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
Continuation of 491. Prerequisite: 491. <Spring>

499. Undergraduate Problems. (1-3 hrs. each semester; maximum 6)††

***501. Advanced Statistics.** (3) Friden
Probability theory, methods and problems of statistical inference. Prerequisite: 200 or 201 or equivalent. <Fall>

***502. Design of Experiments.** (3) Ellis
Examination of problems of design, control and evaluation of experiments. Initial emphasis is on particular experimental designs followed by applications of principles to various areas of psychology. Prerequisite: 501. <Spring>

***503. Seminar in Teaching.** (3) Benedetti
A seminar/practicum designed to aid psychology graduate students in developing their philosophies and skills in the teaching of psychology. Includes readings, papers and discussions of relevant issues, and design of a course, and the making of teaching presentations under feedback conditions. Prerequisite: permission of instructor. <Fall>

***505. Research Techniques in Experimental Psychology.** (2) Ferraro
Shop techniques, elementary principles of electric circuits. <Summer only>

***512. Theory in Educational Psychology.** (3) Logan
The relation of theories of learning to educational psychology. <Offered upon demand>

***521. Research Methods in Child Development.** (3) Price
Review of principal research methods and designs in child development. Supervised research experience. <Fall>

***523. Seminar in Social Development of the Child.** (3) Rosenblum
Research related to the acquisition of social behavior by children and adolescents, including the effects of interaction with the social and cultural environment. Prerequisite: 320. <Fall>

***524. Seminar in Learning, Motivation, and Perception in Children.** (3) Price
In-depth study of selected topics concerning the learning and motivation of normal young children. Prerequisite: 424. <Spring 1973 and alternate years>

***528. Seminar in Cognitive Development.** (3) Johnson
Discussion of research and theory in selected areas of intellectual and cognitive development. <Fall 1973 and alternate years>

***531. Seminar in Clinical Psychology.** (3)‡ Roll
Introduction to major theoretical and research issues in contemporary clinical psychology. Prerequisite: permission of instructor. <Fall>

***532. Seminar in Behavior Pathology.** (3) Koenig
Discussion of the usual descriptive schemes and their limitations followed by exploration of the major research findings (and strategies in abnormal behavior). Prerequisite: 531. <Spring>

***533. Psychological Evaluation: Cognitive Functions.** (3)
Theory, research and practicum in clinical psychological evaluation with children and adults, emphasizing cognitive, perceptual and neurological functions. Prerequisites: 531, 532, or permission of instructor. <Fall>

***534. Psychological Evaluation: Personality Functions.** (3)
Theory, research and practicum in clinical psychological evaluation with children and adults, emphasizing structured and projective personality techniques. Prerequisite: 533, or permission of instructor. <Spring>

***536. Seminar in Developmental Abnormalities.** (3) Rosenblum
Learning problems among children and youth, including working directly with children manifesting such disabilities. Prerequisite: 432. <Spring>

***541. Animal Learning: Complex Processes.** (3) Gluck
Analysis of complex learning processes and problem solving in animals, with emphasis on the primates. <Spring>

***542. Seminar in Sensory Neuropsychology.** (3)†† Feeney
Discussion of the neural processing of sensory information, including structure-function analysis, control of sensory input and sensory-motor interaction. Prerequisites: 240 and 441. <Spring>

***551. Graduate Problems.** (1-3)††

***561. Theories of Learning.** (3) Logan, Ferraro
Systematic examination of the major issues in learning theory. Prerequisite: 361, or 365, or 463. <Fall>

***562. Human Learning and Cognition.** (3) Ellis, Johnson
Basic principles, procedures and paradigms in verbal, perceptual and conceptual learning including models, theories and processes relevant to these areas of human behavior. Prerequisite: 561. <Spring>

***563. Seminar in Human Learning: Transfer and Memory.** (3) Ellis
An examination of experimental issues and theoretical interpretations of transfer and memory. <Fall>

***564. Seminar in Classical Conditioning.** (3) Grice
An examination of experimental issues and theoretical interpretations of classical conditioning. Prerequisite: 561. <Spring>

***566. Experimental Analysis of Operant Behavior.** (3) Ferraro
An advanced study of the experimental literature, methodology and applications of free operant conditioning. Prerequisite: 561. <Spring 1974 and alternate years>

***567. Theories of Perception.** (3) Friden
Review of the major theoretical notions about perceptual processes, and their relationship to current research. <Fall 1972 and alternate years>

***568. Cognitive Processes.** (3) Johnson
Discussion of selected topics in the area of cognitive processes such as conceptual behavior, strategies, information processing and attention. <Fall 1972 and alternate years>

***571. Advanced Social Psychology.** (3) Harris
Research and theory related to social behavior. Emphasis is on mathematical approaches to social psychology, including experimental games and post-decision attitude change. Prerequisite: 371. <Spring 1973 and alternate years>

***572. Theories of Personality.** (3) Norman
Discussion of theories of human personality with original readings of major theorists and supportive research. Prerequisite: 331. <Fall>

***573. Seminar on Cross-cultural Research in Cognitive Development, Learning, Thinking, and Perception.** (3) Irwin
Methods, findings and theories in cross-cultural research with emphasis on problems of design, execution, and interpretation of cross-cultural experiments. Prerequisite: permission of instructor. <Spring>

***599. Master's Thesis.** (1-6)
See the **Graduate School Bulletin** for total credit requirements.

***601. Methods of Behavioral Research.** (3) Grice
An analysis of the scientific method as applied to the study of behavior. Prerequisite: 502. <Fall>

***631. Experimental Psychotherapy I.** (3) Koenig
Application of experimental methods and theories to the modification of deviant behaviors. Prerequisite: permission of instructor. <Fall>

***632. Experimental Psychotherapy II.** (3) Koenig
Continuation of 631. Prerequisite: permission of instructor. <Spring>

***634. Seminar in Treatment of Disturbed Children and Adolescents.** (3) Ruebush
Review of theory and research in the major types of therapeutic intervention and methods of behavior change with children and adolescents. Supervised experience in treating a disturbed child or adolescent. Prerequisite: permission of instructor. <Spring>

***641. Seminar in Physiological Psychology.** (3)†† Rhodes, Feeney
Examination of current research and issues. Prerequisite: permission of instructor. <Spring>

***650. Special Topics in Psychology.** (3)††
Seminars concerning selected contemporary issues. Prerequisite: permission of instructor. <Offered upon demand>

***661. Seminar in Discrimination Learning.** (3) Logan
Critical analysis and development of theories of discrimination and related learning processes. Prerequisite: 561. <Offered upon demand>

***664. Stimulus Control in Operant Conditioning.** (3)†† Ferraro
An analysis of free operant procedures resulting in discriminative processes. Prerequisite: 561 and permission of instructor. <Spring 1973 and alternate years>

***666. Seminar in Perceptual Learning.** (3) Ellis
Analysis of the processes by which conditions of learning modify perceptual behavior. <Fall>

***699. Dissertation.** (3-9 hrs. per semester)
See the **Graduate School Bulletin** for total credit requirements.

PUBLIC ADMINISTRATION

PROFESSORS A. H. Rosenthal (Director), G. L. Boyle.

Courses in this department are designed to prepare students at the graduate level for careers in federal, state, and local government. For curriculum leading to the degree of Master of Arts in Public Administration, see the **Graduate School Bulletin.**

***421. Public Administration.** (3)
(Also offered as Pol Sc 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. <Fall, Spring>

***422. The Administrative Process.** (3)
(Also offered as Pol Sc 422) Using the case-study approach, examines concepts, issues and methods of solving problems involved in the actual administration of public policy at all levels of government. Prerequisite: 421 or comparable experience. <Offered upon demand>

***423. Urban Affairs.** (3)
Designed for graduate students in Public Administration preparing for careers in local or state government. Includes all aspects of the administration of local government. Prerequisite: 421.

***424. Intergovernmental Administrative Relations.** (3)
Examines the history, structure, dynamics, and problems involved in the operation of the federal system, particularly the administrative relationships of federal, state, and local governments. Prerequisite: 421.

***425. Public Personnel Administration.** (3) Rosenthal
(Also offered as Pol Sc 425) Examines concepts involved in the administration of public personnel programs at local, state, and federal levels, including considerations of motivation, behavior, and employee organizations. Prerequisite: 421. <Offered upon demand>

429. Workshop for Interns. (1-3 hrs. per semester, to a maximum of 6)
Available only for students concurrently involved in an intern program approved by the Division.

***445. Economics of the Budget Process.** (3) Boyle
(Also offered as Econ 445.) 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: Econ 350 or permission of instructor.

***521. Administrative Behavior.** (3) Senescu
An examination of the knowledge which is essential to the positive and constructive behavior of the public executive.

***551-552. Problems. (1-3 hrs. per semester, to a maximum of 6)**

***595. Seminar: Public Science Policy and Administration.** (3) Rosenthal
Designed for students preparing for or continuing education in the administration of large-scale science and technological programs in public agencies and in public-private companies. Prerequisite: 421.

***596. Seminar: Public Science Policy and Administration.** (3) Rosenthal
Continuation of 595.

***597. Research Methodology.** (3)
Required. Examines research methods and approaches useful for the collection, analysis and interpretation of data in the field of Public Administration. Prerequisite: 421.

***598. Research Methodology.** (3)
Continuation of 597.

***599. Thesis. (1-6 hrs. per semester)** Rosenthal
See the **Graduate School Bulletin** for total credit requirements.

RECREATION

See Education, Health, Physical Education, and Recreation.

RUSSIAN

See Modern and Classical Languages.

RUSSIAN STUDIES

COMMITTEE IN CHARGE: ASSISTANT PROFESSOR R. Robbins (History), Chairman; PROFESSORS R. Murphy (Geography), J. Sorenson (Political Science); ASSOCIATE PROFESSORS P. Chung (Economics), R. Holzapfel (Modern Languages); ASSISTANT PROFESSOR B. Lindsey (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 stu-

dent with a broad knowledge of modern Russia through study of the social sciences, 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
Russ 101, 102, 251, 252, 307, 345

ECONOMICS, GEOGRAPHY, AND POLITICAL SCIENCE, 18 hours
Econ 200, 201, 450 or 455
Geog 333
Pol Sc 357, and one of the following: 457 or 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
Russ 101, 102, 251, 252

9 ADDITIONAL HOURS CHOSEN FROM:
Econ 450, 455
Geog 333
Pol Sc 357, 457, 459
Hist 303, 348, 349
Russ 307, 338, 345

SOCIOLOGY

PROFESSORS R. F. Tomasson (Chairman), T. Abel, P. David, G. A. Huaco; ASSOCIATE PROFESSORS C. E. Woodhouse, H. C. Meier, G. W. Merkx; ASSISTANT PROFESSORS D. Alvírez, J. A. Blake, J. Fashing, F. L. Gehlen, P. H. McNamara, A. Ugalde; and new appointments to be made.

Explanation of footnotes not indicated will be found on p. 296.

MAJOR STUDY

36 hours of course work, including 101, 102, 103, 371, 471, and 481, and including two courses in Economics, Political Science, and/or Anthropology at the 200 level or above. (Note special requirements for 481.)

MINOR STUDY

18 hours in Sociology courses, of which 9 must be above 300, and including 101 and 371 or 471.

DISTRIBUTED MINOR FOR SOCIOLOGY MAJORS

With the consent of the departmental chairman, a major may offer an American Studies minor as well as a minor in a single department. For requirements, see American Studies.

101. Introduction to Sociology. (3) Tomasson
Basic course; prerequisite to all other courses in the department. <Summer, Fall, Spring>

General Prerequisite: 101 or equivalent.

102. An Introduction to Probability and Statistics. (3)
(Also offered as Math 102.) An introduction to some of the basic ideas in probability and statistics; analysis of numerical data and descriptive statistics, probability and basic probability models for statistics, sampling and statistical inference, techniques of statistical inference illustrated by examples from a variety of fields; demonstration of the use of the computer in statistics. Prerequisite: a knowledge of algebra. Prerequisite for 481. May be taken concurrently with 481. Required for all Sociology majors. <Fall, Spring>

103. Sociological Applications of Statistics. (1)
To be taken in conjunction with 102. Prerequisite for 481. Required for all Sociology majors. May be taken concurrently with 481. <Fall, Spring>

161. The City. (3) Anderson
(Also offered as Arch 161.) Discussion of the interrelations of the physical form and the social, economic, political, and cultural life of the contemporary city.

211. Social Problems: Selected Topics. (3) Fashing, Ugalde
A sociological approach to selected social problems. <Fall, Spring>

214. American Society. (3) F. Gehlen
A descriptive and analytic view of American Society, its basic institutions, their interrelationships and the affect of such factors as urbanization, technology, and race relations.

215. Social Stratification. (3) Blake, Meier
An examination of class, status, and power in society, including some of the consequences of stratification systems. <Fall, Spring>

216. Race and Cultural Relations. (3) McNamara, Merkx
The historical, comparative, and social psychological study of race and cultural relations in the United States and elsewhere. <Fall, Spring>

221. Sociology of Rich and Poor Nations. (3) Merkx
Examination of patterns of development and change of nation-states, with special emphasis upon relationships between the Third World and the industrial states. The impact of class conflict, war, revolution, reform, and colonialism upon national development. <Fall>

225. Structure and Functions of the Family. (3) Meier
Functional analysis of family structure in varying societal contexts; functional foundations of marriage and family institutions, alternative patterns of family role organization, and interconnections with other social structures of wider social systems. <Spring>

226. Sociology of the Barrio. (3)
Survey and analysis of the social structure of the barrio emphasizing present Chicano urban conditions as products of American social and political processes.

227. Chicanismo: Contemporary Mexican Society. (3)
The nature of contemporary Chicano society. Emphasis on an analysis of various Chicano social protest movements from the viewpoint of a comparison of social bases. Issue-emphasis and goal orientations. Relevant historical and demographic information will be discussed. Prerequisite: competence in Spanish.

230. Society and Personality. (3) Fashing, McNamara
The social sources of the contemporary problem of identity as well as typical responses to the quest for identity. Concepts such as fashion, ritual, the hero, crusades will be explored in historical context and applied to the process of seeking individual and group identity. <Fall>

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 Chairman.

***305-306. Nature of Social Inquiry I, II. (3, 3)**
305—Examination of philosophy and methodology of social inquiry covering basic problems of sociological explanation; 306—Problems of theory construction and testing, including mathematical and other models. Prerequisite for 306: 305 or Phil 465 and either Math 122 or a statistics course. <305—Fall, 306—Spring>

308. Sociology of Sex Roles. (3)
A cross-cultural analysis of sex roles; studying socialization processes and the means of instilling roles and stereotyping, and the effect of this upon the various cultures. Prerequisite: 101.

310. The Black Family in America. (3)
Changes in the structure of the black family from its historical roots in Africa through slavery and reconstruction to the contemporary setting in the U.S. Effects of social and economic conditions on black family life. <Offered upon demand>

***312. Juvenile Delinquency.** (3)
The nature of juvenile delinquency, its prediction, prevention and control.

***313. Criminology.** (3) David
The nature of crime, types of criminal behavior, and explanations of crime. <Fall, Spring>

***314. Sociology of Corrections.** (3)
The police, courts, prisons, probation and parole and recent developments in the area of crime control. Prerequisite: 312 or 313.

***321. Sociology of Medical Practice.** (3)
Analysis of medical care settings like hospitals with special attention to the professional roles of medical practitioners and the role of the patient.

***331. Collective Behavior.** (3) Blake
Theoretical analysis of groups which emerge spontaneously in response to social strain, and of social behavior in the form of panics, crazes, hostile outbursts, and social movements.

***338.** [372] **The City in History.** [History of Urban Development] (3) Roebuck
(Also offered as Arch 338 and Hist 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.

***351. The Urban Community.** (3) McNamara
The form and development of the urban community with respect to demographic structure, spatial and temporal patterns, and functional organization. Metropolitan emergence and city-hinterland relations.

***361. Social Implications of Technological Change.** (3)
(Also offered as Anth 361.) The impact of technological change on societal institutions with special attention to underdeveloped areas.

***365. Urbanization in Latin America.** (3) Ugalde
(Also offered as Anth 365.) Analyzes the processes related to urbanization in Latin America, comparing them with developments following industrialization and rural-to-urban migrations elsewhere. Emphasis on social and cultural changes accompanying rural-to-urban migration. <Fall>

***371. History of Social Thought.** (3) Abel, Woodhouse
Examination of the rise of sociology as a scientific discipline, principally during the 19th century, with special attention to the contributions of Comte, Marx, Durkheim, Tönnies, Simmel, and Weber. <Fall, Spring>

***381. Sociology of Science.** (3) McCann
An examination of the structure of science and its role in society. Topics will include science as a social institution, values of science, science and public policy, and the development of science. <Spring>

***411. Deviant Behavior.** (3)
The nature of deviant behavior as it is revealed through a review of theory and research on deviant behavior. Selective examination of particular types of individual and subcultural deviancy. Prospects for the emergence of a general theory of deviant behavior. Prerequisite: 312 or 313. <Fall, Spring>

***416. Workshop in Intercultural Relations.** (4)
(Also offered as Ed Fdn 416.) <Summer only>

***420. Sociology of 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 background characteristics of authors, readers, critics, publishers, and patrons. <Fall>

***421. Sociology of Education.** (3) F. Gehlen
The comparative study of the structure and functioning of educational institutions in the developing and developed societies. <Fall, Spring>

***422. Sociology of Religion.** (3) McNamara, Ugalde
The study of the development, structure, and functioning of religious institutions in both western and non-western societies. <Spring>

***425. Latin American Institutions.** (3) Ugalde
A study of selected institutional arrangements in various Latin American societies. <Spring>

***430. Sociology of Knowledge.** (3) Huaco
Study of the social bases of ideology. Ideological phenomena analyzed in terms of distortion, role and possible isomorphisms by social and cultural patterns. The social causation of ideology is traced through the differential social background characteristics of members of specific groups to the larger social and historical setting. <Spring>

***435. Small Group Analysis.** (3) Meier
Behavioral dynamics and emergent structures in small groups and interpersonal networks; the interplay of informal and institutionalized patterns of social relationships.

***441. Formal Organizations.** (3) McNamara
An examination of the nature and types of formal organizations, formal organizations and society, and various aspects of their internal structure.

***445. Occupations and Professions.** (3) Woodhouse
A comparison of occupational subcultures; the patterns of interaction and the social norms which characterize relations among colleagues, and their relations with the people being served; recruitment and mobility within occupations; the process of professionalization. <Fall>

***451. Population Problems.** (3) McCann
Study of fertility, mortality, migration, and the composition of populations. Emphasis on sources and evaluation of data. <Spring>

***461. Social Change.** (3) Abel, Woodhouse
The conditions and processes related to the formation of new social structures and the emergence of new social norms as exemplified by political revolutions, reform movements, and cultural diffusion. Theories of social change will be critically analyzed.

***465. City Planning Methods.** (3) Antoniades
(Also offered as Arch, Econ, and Pol Sc 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.

***471. Contemporary Sociological Theory.** (3) Merkx
Analysis and comparison of major contributions to sociological theory since 1900, considering their continuity with older theoretical positions and application in contemporary research. <Fall, Spring>

***481. Research Methods in Sociology.** (3) Meier
A consideration of the sociological research enterprise from problem formulation to the interpretation of findings; elementary principles of theory verification, research design, instrumentation, and the treatment of empirical data. Field and/or laboratory exercises. Prerequisites: 9 hrs. of sociology, 102, 103, or equivalent, or permission of the instructor. 102 and 103 may be taken concurrently with 481. <Fall, Spring>

§*485. Seminario de Investigación sobre la Sociedad Mejicano-Americana. (3) Merkx
El analisis de investigaciones empíricas sobre la organización, cultura, y ecología de la sociedad mejicano-americana en el suroeste. El curso comprendéra también la formulación de proyectos de investigación empíricos. Cada estudiante llevara a cabo un trabajo de investigación en el campo. La lengua de instrucción del curso sera español. Se requiere: Dominio de español, nueve horas de sociología incluyendo 481, o permiso del instructor.

490. Directed Study. (1-3, to a maximum of 6) Alvírez, Blake, David, Fashing, F. Gehlen, Huaco, McNamara, Meier, Merkx, Tomasson, Ugalde, Woodhouse
Restricted to students with substantial background in Sociology. Permission of Chairman required.

***500. Seminar: Social Organization.** (3)

***501. Interdepartmental Seminar in the Culture of the United States.** (3)
(See Am St 501.)

§ Limited to students with competence in Spanish.

***502. Seminar: Social Systems Analysis.** (3) Meier
Critical examination of alternative approaches to social system analysis; conceptual analysis of system elements, processes, and organization from the standpoint of heuristic utility.

***503. Seminar: Political Sociology.** (3) Woodhouse
An exploration of sociological theories pertinent to the functioning of political systems, and the application of these theories to case studies of political behavior.

***504. Seminar: The Control of Deviance.** (3)
A consideration of social processes and structures tending to prevent or reduce deviance. Prerequisite: 312, 313, or 411.

***505. Seminar: Theory of Complex Organizations.** (3) McNamara, Ugalde
The development and formalization of various contributions to complex organization theory.

***506. Seminar: Comparing Nations.** (3) Tomasson
Comparative study of the structure and functioning of various institutions in the developed societies. Topics will change from year to year. <Fall>

***507. Seminar: Sociological Theory.** (3)‡
Detailed analysis of theoretical contributions to sociology by individuals and/or schools of thought. Subject depends upon instructor.

***508. Seminar: Comparative Latin American Social Systems.** (3) Ugalde
Comparative study of the social structures and processes of selected Latin American countries. Emphasis will be given to stratification, mobility, and social change. Prerequisite: 425 or permission of instructor. <Fall>

***509. Seminar: Sociology of Science.** (3)
Intensive discussion of the relationship of science to society. Emphasis on the modern period but historical aspects will be treated. Students will be expected to present papers and lead discussions.

***510. Seminar: Social Movements.** (3) Fashing
A systematic analysis of the genesis, growth, and development of selected religious, political, and communal movements. <Fall>

***511. Proseminar in Sociology.** (3)
Presentations by various faculty members of theory, methodology, and research opportunities in distinctive subfields of contemporary sociology. Required of all graduate students in Sociology. <Fall, Spring>

***512. Seminar in the Sociology of Literature.** (3) Huaco
The societal causation of literary phenomena. Review of contributions of major theorists. Emphasis on analysis of the novel, modern drama, and philosophy. <Spring>

***513-514. Graduate Lectures in Contemporary Sociological Theory I, II.** (3, 3) Huaco
First semester: Survey of American persuasions in contemporary theory, including the philosophy of science, the three systems of Parsons, anthropological theory, functionalism, social phenomenology, symbolic interactionism, exchange theory. Second semester: Survey of contemporary developments in structural theory. Exposition and critical analysis of French, German, Eastern European and American contributions. <513—Fall, 514—Spring>

***531. Sociology Teaching Practicum.** (3) Tomasson
A course specifically and only for teaching assistants in 101 dealing with the problems and methods of teaching sociology. Meetings will be held throughout the academic year, but credit will be given only for the spring semester.

***551-552. Problems.** (2-3 hrs. each semester) Alvírez, Blake, David, Fashing, Gehlen, Huaco, McNamara, Meier, Merkx, Tomasson, Ugalde, Woodhouse

***581. Seminar: Sociology of Education.** (3) Bachelor, Fashing
(Also offered as Ed Fdn 581.) Opportunity for students with appropriate backgrounds in Sociology or Education to gain experience in field research projects chosen by instructor or by agreement. <Summer, Fall, Spring>

***584. Interdisciplinary Seminar on Problems of Modernization in Latin America.** (3) Lieuwen, Merkx, Needler, Schwerin
(Also offerd as Anth, Econ, Hist, Ib-Am, Lat Am, and Pol Sc 584.) <Spring>

***599. Master's Thesis.** (1-6 hrs. per semester) Alvírez, Blake, David, Fashing, Gehlen, Huaco, McNamara, Meir, Merkx, Tomasson, Ugalde, Woodhouse
See the **Graduate School Bulletin** for total credit requirements.

SPANISH

See Modern and Classical Languages.

SPECIAL EDUCATION

See Education, Guidance and Special Education.

SPEECH COMMUNICATION

(Chairman to be appointed); PROFESSORS W. C. Eubank, H. O. Ried; ASSOCIATE PROFESSORS R. C. Dick, C. B. Owens; ASSISTANT PROFESSORS G. M. Goldhaber, J. L. Hoban, W. C. Primm, L. B. Rosenfeld, W. M. Shimer, R. D. Snell. CONSULTANT IN TELEVISION F. C. Hempen.

MAJOR STUDY

36 hours in Speech Communication, including Sp Com 101 and at least 3 hours from each of the following areas (1 through 4):

1. Performance: 102, 200, 255, 260, 277, 278, 360, 460
2. Telecommunication: 251, 265, 365, 366, 465, 466, 485
3. Rhetoric and Public Address: 250, 305, 306, 495, 496, 498, 499
4. Communication: 315, 350, 411, 412, 415

At least 18 hours at 300-level or above.

OTHER AREAS IN WHICH SPECIFIC COURSES ARE NOT REQUIRED

5. Speech Education: 256, 470, 471, 490
6. Speech Science: 280, 303

MINOR STUDY

Sp Com 101 plus 15 hours, of which 9 hours must be 300 level or above courses.

Students in the College of Arts and Sciences may minor in Theatre Arts. For course requirements, see. p. 505.

101. Fundamentals of Speech Communication. (3)
The study of interpersonal communication in small group and public communication, with emphasis on the study of speech communication principles. <Summer, Fall, Spring>

102. Fundamentals of Speech Communication. (3)
An introduction to the areas of study in the field of speech. Students will perfect speaking abilities and investigate special topics. Prerequisite: 101 or permission of instructor. <Fall, Spring>

200. Intercollegiate Debating. (1 to a maximum of 4)
Active participation in intercollegiate debating. Prerequisite: permission of forensics director. <Fall only>

250. Parliamentary Procedure. (1) Eubank, Owens
Study and practice of the rules governing the proceedings of groups and deliberating assemblies. <Fall, Spring>

251. Introduction to Broadcasting. (3) Shimer
Origin and development of broadcasting, government regulation, foreign systems, structure and practices in the broadcast industry, educational broadcasting, and sociological effects of radio and television. <Fall>

255. Public Speaking. (3)
Emphasis on audience analysis and adaption, organization and delivery. Critical analysis of significant public speeches. Speech Communication majors and minors should take 101 and 102, and not 255. **Credit will not be allowed for both 255 and 256.** <Summer, Fall, Spring>

256. Communication for Teachers. (3)
Theory and practice of oral communication adapted to the special needs of the classroom teachers. Prerequisite: Education majors only. **Credit will not be allowed for both 255 and 256.** <Summer, Fall, Spring>

260. Oral Interpretation. (3) Eubank
Voice training with emphasis upon the developing of voice and body in oral communication; oral reading of poetry and prose excerpts. Prerequisite: 101 or 255 or 256. <Fall, Spring>

265. Telecommunication Production Procedures. (3) Shimer
Basic theory and practice in studio and control room operations: radio, television, film for television. Two lectures, one lab. <Fall>

277. Discussion and Leadership Training. (3) Dick, Eubank, Goldhaber, Rosenfeld
Theory and practice of process of small group communication and related leadership training. Prerequisite: permission of instructor. <Fall>

278. Argumentation and Debate. (3) Dick, Eubank, Primm
Theory and practice of principles of argumentative speaking and debate aimed at training the student to be a more effective advocate in the public forum. Prerequisite: permission of instructor. <Spring>

280. Scientific Bases of Speech. (3) Chreist
(Also offered as Com Ds 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>

292. Introduction to the Study of Language. (3 or 4)
(See Ling. 292).

***303. Phonetics.** (3) Chreist
(Also offered as Com Ds 303.) English phonetics as applied to the problems of articulation, pronunciation, rhythm, dialects, and to the teaching of speech, English, and to speech correction. <Fall, Spring>

***305. Advanced Public Speaking.** (3) Dick, Eubank, Owens
Rhetorical principles combined with instruction on delivery of various forms of public address. Critical analysis of vital, contemporary speeches. Prerequisites: 101 and 102 or 255 or 256 or permision of instructor. <Fall, Spring>

306. Rhetoric of Dissent, Agitation and Revolution. [Agitation and Control] (3) Hoban
A study of vital issues as reflected in the voices of a wide variety of communicators—including the agitator, the demagogue, and the protestor as well as the more traditional representatives of the establishment. Provides the student with critical and analytical tools for examining and evaluating discourse on controversial issues. <Fall>

***315. Problems of Interpersonal Communication.** (3) Goldhaber, Rosenfeld
Application of modern communication theory in the dyadic and small group environment. Emphasis will vary and may include nonverbal communication, family communication, and small group communication. <Fall, Spring>

***350. General Semantics.** (3) Primm
Critical examination of the theory of general semantics, with emphasis upon its application to communication in general and oral communication in particular. Work of Korzybski, Rapoport, Lee, Hayakawa, etc., will be considered. <Spring>

***354. The Nature of Language.** (3)
(See Anth 354.)

***359. Language and Culture.** (3) Rigsby
(See Anth 359.)

***360. Advanced Oral Interpretation.** (3) Eubank
Theory and techniques involved in the interpretation of prose and drama. Prerequisite: 260 or permission of instructor. <Spring>

***365. Television Film Production.** (3) Shimer
Film production focusing on forms and formats suitable for presentation on television including but not limited to commercials, news and documentary. Two lectures, one lab. Prerequisite: 265. <Spring>

***366. Television Studio Production.** (3) Shimer
Television production with emphasis on the creative responsibilities of the director and the producer. Two lectures, one lab. Prerequisite: 265. <Fall>

***403. History of the English Language.** (3) Kuntz
(See Engl 445.)

***411. Theories of Communication.** (3) Rosenfeld
Critical analysis of contemporary theories, concepts, models and empirial research relevant to communicative processes ranging from intrapersonal communication to mass communication. Prerequisite: permission of instructor. <Fall>

***412. Organizational Communication.** (3) Goldhaber
(Also offered as B&AS 412.) Examination of theoretical and research literature of industrial and organizational communication; analysis of basic interpersonal communication problems in complex organizations. Students are placed in a local organization for a field study. <Fall>

***415. Advanced Interpersonal Communication.** (3) Goldhaber, Rosenfeld
Prerequisite: 315 or permission of instructor. <Fall, Spring>

440. Undergraduate Problems. (1-3, to a maximum of 6).
Prerequisite: permission of departmental chairman. <Summer, Fall, Spring>

***460. Oral Interpretation: Program Building.** (3) Eubank
Theory and techniques involved in building the lecture recital and multiple readings. Students will build and present an interpretation program. Prerequisites: 360 or permission of instructor. <Spring>

***465. Broadcast Programming and Policy.** (3) Shimer
Principles of television and radio programming; analysis of programming practices; regulations governing broadcasting; responsibilities of broadcasters. Prerequisite: 251. <Spring>

***466. Writing for the Telecommunication Media.** (3) Shimar
Theory, analysis and practice in writing for radio, television, and television film. Prerequisite: 265. <Fall>

***470. Teaching Speech in the Schools.** (3) Snell
For teachers in the elementary and secondary schools. Prerequisite: permission of instructor. <Fall>

***471. Current Developments in Speech Communication Education.** (3) Snell
Follow-up course to 470. Stresses role of communication in education, current research in speech education, recent developments in instructional theories and their application to speech education, recent research on such problems as stage fright, motivation, evaluation, and criticism. Prerequisite: permission of instructor. <Spring>

***485. Advanced Telecommunication Production Procedures.** (3) Shimer
An advanced course in non-print media communication emphasizing creative integration of all media in a single presentation, emphasis on broadcast applications. Individual and team projects. Two lectures, one lab. Prerequisites: 265 and either 365 or 366 (both recommended). <Spring>

***490. Administration of the Forensic Program.** (2-3) Dick, Eubank, Snell
Directing competitive speech activities: debate, discussion, oratory, extemporaneous and impromptu speaking, oral interpretation, tournaments and festivals in high school and college. Prerequisite: 470 or permission of instructor. <Summer, Fall, Spring>

***491. Forensic Practicum.** (3)
Companion course to 490. Students will apply theory in a practicum setting. Upper division and graduate students will actually direct high school students in preparation for forensic participation. <Summer only>

***492. Introduction to Linguistics.** (3) Pickett
(See Engl 440)

493. Reading and Research in Honors. (3) Summer, Fall, Spring

494. Senior Thesis. (3) <Summer, Fall, Spring>

***495. American Public Adress.** (3) Dick, Eubank, Owens
Speeches of great American speakers studied against the background of their lives and the issues of the times. Prerequisites: 101, 102, 277, or permission of instructor. <Fall 1973 and alternate years>

***496. British Public Address.** (3) Eubank, Owens
Speeches of great British speakers studied against the background of their lives and the issues of the times. Prerequisites: 101, 102, 277, or permission of instructor. <Fall 1972 and alternate years>

*498. **Persuasion.** (3) Dick, Eubank, Owens
Open to seniors and graduates. Theory of persuasion. Construction and delivery of persuasive speeches. Prerequisite: permission of instructor. <Spring>

*499. **Classical Rhetoric.** (3) Eubank, Hoban, Owens
Roots of rhetorical thought from the fifth entury B.C. to the first century A.D. Primary attention to the relevant works of Plato, Aristotle, Isocrates, Cicero and Quintilian. <Fall>

*500. **Introduction to Graduate Study.** (3) Dick, Goldhaber, Hoban, Rosenfeld
The various areas within the field of speech with emphasis on research problems, techniques and bibliography. Each student will submit a seminar paper demonstrating research ability. Required of all graduate students. <Fall>

*520. **Seminar in Telecommunication.** (3) Shimer
<Spring>

*529. **Workshop in Basic Communication.** (4) Goldhaber, Simons
<Summer only>

*540. **Renaissance and Modern Rhetoric.** (3) Hoban
Development of rhetorical thought from the Middle Ages through the 19th century, focusing on such theorists as Erasmus, Wilson, Ramus, Campbell, Blair and Whately. Emphasis on adherence to and significant deviation from classical theories and traditions. Prerequisite: permission of instructor. <Offered on demand>

*541. **Contemporary Rhetoric.** (3) Hoban
Critical consideration of rhetorical thought in the 20th century, with emphasis on the contribution of general semantics, linguistics, philosophy and literary criticism. Focus on theorists such as I. A. Richards, Kenneth Burke, A. J. Ayer, and Stephen Toulmin. Prerequisite: permission of instructor. <Spring>

*542. **Literature of Communication Research.** (3) Goldhaber, Rosenfeld
(A critical examination of recent experimental literature on human communication with emphasis on identifying the relevant variables of the communication process. Prerequisite: permission of the instructor. <Spring>

*543. **Seminar in Interpersonal Communication.** (3) Goldhaber, Rosenfeld
Prerequisites: 315, 415, or permission of instructor. <Offered on demand>

*544. **Seminar in Organizational Communication.** (3) Goldhaber
(Also offered as B&AS 569.) Prerequisite: 412 or permission of instructor. Students are placed in a local organization for a field study. <Spring>

*545. **Seminar in Public Address.** (3) Dick, Eubank, Owens
Prerequisite: 495 or 496. <Spring, Summer>

*546. **Communication Research.** (3) Goldhaber, Rosenfeld
Critical consideration of the nature and selection of research problems in speech communication, with special emphasis on measurement of methodologies, techniques of data collection and analysis, and interpretation of results. Prerequisite: permission of instructor. <Spring>

*547. **Seminar in Rhetorical Criticism.** (3) Eubank, Hoban, Owens
Study and application of principles of rhetorical criticism and methods of research. Critical analysis and evaluation of political and legislative speaking. <Summer, Spring>

*551-552. **Problems.** (1-3 hrs. each semester) <Summer, Fall, Spring>

*555. **Seminar in Linguistics and Language Pedagogy.** (1-3) Rigsby, Spolsky, Springer
(See Ling 555.)

*599. **Master's Thesis** (1-6 hrs. per semester) <Summer, Fall, Spring>

STATISTICS

See Mathematics & Statistics.

THEATRE ARTS

PROFESSORS J. Yell (Chairman); W. J. Martin, E. Snapp; ASSOCIATE PROFESSOR N. Blackburn; ASSISTANT PROFESSORS P. Buchan, C. Sirkel, G. Schreiber, E. Waters; and new appointments to be made.

MAJOR STUDY

College of Fine Arts: See pp. 254-255.

College of Education: TA 101, 125, 126, 129, 275, 276, 285, 286, 305, 306, 361, and Engl 352 or 353 or 487. Total 36 hours.

MINOR STUDY

Arranged in consultation with the chairman of the Theatre Arts Department.

101. Voice and Diction. (3) Buchan, Sirkel, Yell
Training for the effective use of the speaking voice; basic principles of voice production, diction, and phonetics. Credit will not be allowed for both Sp Com and TA 101. <Fall, Spring>

102. Voice and Diction. (3) Yell
Specialized training in the use of the voice for interpretation of stage roles and for students preparing to enter speech-oriented careers. Prerequisite: 101 or equivalent. <Spring>

115. Theatre Appreciation. (3) Sirkel
An introduction to the theatre in terms of the rewarding experience and personal enjoyment it affords both those who create it and those who appreciate it. <Summer, Fall>

116. Theatre Appreciation. (3) Sirkel
Continuation of 115. <Spring, Summer>

125. Theatre Practice I. (3)
To provide drama majors with a working knowledge of theatre. <Fall>

126. Theatre Practice II. (3)
Continuation of 125. Scenes will be presented from the various historical periods. <Spring>

129. Stage Craft. (3)
Methods, materials, and techniques of stage carpentry. Students construct scenery for season's productions. <Fall, Spring>

130. Stage Craft. (3)
Continuation of 129. Prerequisite: 129. <Fall, Spring>

140. Makeup. (3) Blackburn
A practical course on the art of makeup for stage and television, covering both basic principles and specific techniques. Prerequisite: 126 or equivalent. <Fall, Spring>

255. Stage Lighting. (3) Schreiber
Theory and practice of present-day methods of lighting the stage. Prerequisite: 126 or equivalent. <Fall>

256. Stage Lighting. (3) Blackburn
Continuation of 255. Prerequisite: 255. <Spring>

275. Technical Production. (3)
Analysis, planning, and construction of stage scenery and properties; study of the theatre plant. Prerequisites: 126 and 129 <Fall>

276. Technical Production. (3)
Continuation of 275. Prerequisite: 275. <Spring>

285. Acting Technique. (3)
Basic methods of interpretation for stage, television, and screen. Prerequisites: 102 and 126. <Fall>

286. Acting Technique. (3) Buchan, Snapp
Continuation of 285. Prerequisite: 285. <Spring>

305. Rehearsal and Performance. (3) Yell
Techniques for the director in both rehearsal and performance. Prerequisite: 286. <Fall>

306. Rehearsal and Performance. (3) Yell
Continuation of 305. Prerequisite: 305. <Spring>

315. Theatre Production for Teachers: Acting and Directing. (3) Snapp
Essentials of acting and directing; rehearsal methods and production organization. May not be taken by theatre arts majors for credit. 3 lectures, 2 hrs. lab. <Fall>

316. Theatre Production for Teachers: Technical Production. (3)
Essentials of stagecraft, lighting, makeup, scene and costume design; backstage organization and production, techniques. May not be taken by theatre arts majors for credit. 3 lectures, 2 hrs. lab. <Spring>

317. Educational Theatre. (3) Snapp
The organizing and teaching of drama and dramatic activities in the junior and senior high schools. Special emphasis given to the uses of educational theatre as an integral part of the school curriculum and the student activities program. <Spring>

335. Theatre History. (3) Blackburn
Development of dramatic art from the Greeks, with a study of historical backgrounds of dramatic thought and with special emphasis on production techniques. <Fall>

336. Theatre History. (3) Blackburn
Continuation of 335 to present day. <Spring>

350. Theatre Management. (3)
A practical study of the university theatre, the civic and community, and the professional theatre; principles of production, organization, programming, house management, budgets, advertising, and box office. Prerequisites: 126 and upper division standing. <Fall, Spring>

351. Television Drama Production. [Radio-Television Drama Production] (3)
Basic directing techniques for the dramatic television program. Workshop, 3 lectures, 3 hrs. lab. Prerequisites: 102, 126, and Sp Com 265. <Alternate years, Fall>

352. Advanced Television Drama Production. [Advancel Radio-Television Drama Production] (3)
Advanced directing techniques, adapting and editing the dramatic television program. Workshop, 3 lectures, 3 hrs. lab. Prerequisite: 351. <Alternate years, Spring>

355. Playwriting. (3)
Writing, reading, and analysis of student plays is supplemented by a critical examination of their playing qualities as revealed in laboratory performances before invited groups. Prerequisite: upper-division standing. 2 lectures, 2 hrs. lab. <Fall 1972 and alternate years>

356. Playwriting. (3)
Continuation of 355. Prerequisite: 355 or permission of instructor. <Spring 1973 and alternate years>

°**361. Advanced Rehearsal and Performance.** (3) Snapp
Advanced study of directing techniques; analysis of scripts and methods of interpretation in production. Prerequisite: 306. <Fall>

°**362. Advanced Rehearsal and Performance.** (3) Snapp
Continuation of 361. Prerequisite: 361. <Spring>

365. Advanced Acting. (3)
A study of acting styles as related to periods of theatre history. Prerequisite: 286. <Fall>

366. Advanced Acting. (3)
Continuation of 365. Prerequisite 365. <Spring>

375. Scene Design. (3)
Materials, techniques, and methods of scene design and scene painting. Student designs compete for season's productions. Prerequisite: 276 or equivalent. <Fall>

376. Scene Design. (3)
Continuation of 375. Prerequisite: 375. <Spring>

385. Costume Design. (3) Sirkel
Historic, modern, and stylized costume; design for the stage. Students execute costumes for season's productions. Prerequisite: upper-division standing. <Fall>

386. Costume Design. (3) Sirkel
Continuation of 385. Prerequisite: 385. <Spring>

***414. Experimental Music Theatre.** (1-4)‡ Philips
(See FA 414.) <Spring>

° Undergraduate students not enrolled in the professional curricula or teacher education curricula may take this course only with permission of the department chairman.

499. Thesis. (1-6)†
Directed study in any major field of the theatre arts. Prerequisite: an average of 3.0 or better in theatre arts major. <Summer, Fall, Spring>

DANCE

MAJOR STUDY

Not offered.

MINOR STUDY

20 hours, including Music 139 and 140; 3 elective hours in theatre arts; and 11 hours in Dance 259 and 359. Students working toward a minor in dance are required to present a dance demonstration and to perform with the Dance Workshop.

159. Stage Movement. (3) Waters
Movement training for the actor emphasizing stage fighting and characterization through dramatic dance and mime. Prerequisite: TA 126. <Fall, Spring>

¶259. Modern Dance. (1-3)† Waters
Explorations in movement leading into choreography. Open to all University students. Audition required. <Fall, Spring>

¶359. Dance Workshop. (1-4)† Waters
Rehearsal and production experiences. Open to all University students. Audition required. <Fall, Spring>

FILM

MAJOR STUDY

Although a formally structured major in film is not offered, students desiring to concentrate in film studies will find a number of relevant courses listed under art history, art (studio), English, journalism, speech, and theatre arts. Such a concentration would be possible within the program leading to the B.U.S. degree.

MINOR STUDY

No formally structured minor is offered. See above.

210. [FA 210] **Introduction to the Film.** [Introduction to the Cinema] **(3)**
An historical and critical survey, with examples, of major tendencies in the development of the motion picture as an art form. <Fall, Spring>

***327-328. History of the Film. (3, 3)**
The history of the motion picture from its beginning to the present day. <327—Fall; 328—Spring>

388. Cinematic Photography. (3)
(See Art 388.) <Fall, Spring>

***427. Topics in Film History. (3)‡**
<Fall, Spring>

***488. Advanced Cinematic Photography. (3)**
(See Art 488.) <Fall, Spring>

UNIVERSITY COLLEGE—HUMAN SERVICES

§030. Introduction to Human Behavior. (3)
An elementary course in the basic principles of all the human services, and the role of the para-professional in the human service area.

§031. Ethnology of the Southwest. (3)
This course stresses the development and behavior of man in the Southwest. Social and cultural studies of the people of the Southwest are utilized. Prerequisite: 030.

¶ 8 hours credit may be substituted for activity PE and Ensemble Music elective in College of A&S

§ Credit limited to students enrolled in A. A. in Human Services degree program.

§032. **The Para-Professional as a Social Change Agent.** (3)
The student will examine the contemporary social problems of our society and analyze the role of the para-professional as an agent of change. Prerequisite: 030.

§034, 035, 036, 037, 038, 039. **On-The-Job-Training.** (6 hrs. per course)
Observation and working in the human service field. The student must fulfill the basic working criteria set forth by the agency. 034 is prerequisite for 035, 035 is prerequisite for 036, etc.

§ Credit limited to students enrolled in A. A. in Human Services degree program.

ENROLLMENT AND DEGREE STATISTICS

*ENROLLMENT FOR 1971-1972	Men	Women	Total
Semester I, 1971-72	11,342	8,109	19,451
Semester II, 1971-72	10,700	7,714	18,414
Summer Session, 1971 (including workshops)	3,404	3,189	6,592

SUMMARY OF DEGREES CONFERRED 1901-1971

Earned Degrees					Total Earned Degrees	Honorary Degrees
Bachelor's	Master's	Law	Medicine	Doctor's		
22,657	6,604	509	81	843	30,694	119

* Exclusive of independent study, extension, and non-credit courses.

INDEX

Absences, 161
Academic calendars, 8, 9, 10
Academic programs, 81
Academic regulations, 155
Accounts, student, 119
Accreditation, University, 81; Architecture, 82; Continuing Education, 81, 288; Chemistry, 327; Education, 81, 201; Engineering, 81, 232, 233; Journalism, 81; Law, 81, 259; Medicine, 82; Music, 81, 250; Music Education, 81, 224; Nursing, 82, 269; Pharmacy, 81, 275
ACT, see American College Tests
Activities, see Student Activities
Activity fee, Air Force ROTC, 117, 293; see also Associated Students fee
Address, change in, 122, 158
Administrative offices and officers, 14
Admission, general regulations, 103; by certificate, 104; by examination, 106; early, 106; of freshmen, 104; of non-degree students, 110; of readmitted students, 109; of students from other countries, 112; of transfers, 107; qualitative requirements for, 104, 108; to A&S, 179; to B&AS, 193, 197; to Dental Assisting, 281; to Dental Hygiene, 283; to Educ, 204; to Engr, 232; to FA, 246; to Grad School, 257; to Law, 259; to Medicine, 261; to Nurs, 269; to Pharm, 277; to Univ Coll, 106, 172
Adult education, 80, 290
Advance housing deposit, 122; refund, 123, 124
Advance payment of tuition and fees, 114, 116
Advanced placement program, 106
Advanced standing, admission with, 107; in B&AS, 194, 198; in foreign languages, 451; in Pharm, 277
Advertising-management sequence, 423
Advisement, 103, 114, 148, 149, 167, 171, 172, 246, 270, 278
Aerospace Studies, Department of, 298; curriculum, 294; military training, 101
Aid, student, see Financial aid
Aims of the University, 80
Air Force ROTC, 101, 293; activity fee, 117, 293; in Engr, 233; in Pharm, 278; see also Aerospace Studies
Alumni Association, 85
Alumni Memorial Chapel, 153
American Association of Colleges for Teacher Education, 81
American Association of Colleges of Pharmacy, 81, 275, 276
American Association of University Women, 81
American Bar Association, 81, 259
American Chemical Society, 327
American College Tests, 103, 177
American Council on Education for Journalism, 81
American Council on Pharmaceutical Education, 81, 275
American Dental Hygienists' Association, 283
American Medical Association, Council on Medical Education, 82
American Society for Engineering Education, 232
American Students Abroad, 149
American Studies, 257, 299; minor, 299
Andean study and research center, 83, 190, 291; staff, 63
Annual Research Lectureship, 86
Anthropology, Department of, 300; field session, 9, 301, 302; Maxwell museum of, 86
Apartments, see Housing
Application fee, 103, 104, 107, 110, 117, 257, 262, 291
Application for admission, 103, 104, 107, 108, 110, 257, 259, 261, 283; deadlines, 9, 10, 103, 104, 108, 257, 259, 261, 283
Applied music, concentrations, 252; fees, 116, 464; requirements, 252, 464
Applied music pedagogy concentration, 252
Archaeology, see Anthropology
Architectural thesis fee, 117
Architecture, Department of, 306; curriculum, 247; thesis fee, 117
Art, Department of, 308; curricula, 248, 249, 250; galleries, 87; museum, 87; teacher education curricula, 250
Art Education, Department of, 344; curriculum, 211; minor, 212
Art galleries, 87
Art Museum, University, 87
Arts and Sciences, College of, 179; admission to, 179; combined program with Engr, 183; degree requirements, 180; departments of, 191; distributed minors, 182; Division of Inter-American Affairs, 189; scholastic regulations, 159; teacher education, 182
Assistantships, 257
Associate of Arts degree in human services, 175; in community services, 267; in Education, 202
Associate of Science degree in dental hygiene, 284; in Laboratory Technology, 176
Associated Students, 153; fee, 119
Association of American Law Schools, 81
Association of American Medical Colleges, 82
Astronomy, 484
Astrophysics, major, 480
Athletic Coaching, minor in, 218
Athletics, 152; grants-in-aid, 129
Attendance, class, 161; Commencement, 166; recitals, 250
Audio-visual center, see Instructional Media Services
Audited courses, 159; fees, 116
Awards, 128, 260; freshman, 133; upperclass, 143

Bachelor of University Studies, 173; admission, 174; degree requirements, 175
Bachelor's degree, see Degrees
Basic training, credit, 113
Bilingual education, composite minor in, 215
Biology, Department of, 313; museum, 87
Board, see Housing
Bookstore, UNM, 152
Botany, see Biology
Branch College at Gallup, 83, 290; staff, 63
Breakage, 119
Buildings, 82
Bureau of Educational Planning and Development, 100
Bureau of Engineering Research, 100
Bureau of Revenue Training Program, 94
Business and Administrative Sciences, School of, 192; admission to, 193; 197; BBA program, 193; concentrations, 192; courses offered, 318; graduation requirements, 194, 196; scholastic regulations, 192; three-two program, 196
Business Education, courses in, 372; curricula, 213; minor, 214; two-year secretarial program in Univ Coll, 178
Business Research, Bureau of, 93; Community Economic Education and Development program, 94; Data Bank, 94

Calendars, 8, 9, 10
Campus and buildings, 82, 261; see also campus maps at front of catalog
Career Services Center, 150
Center for Environmental Research & Development, 95
Center for Human Resources Development, 97
Center for Leisure and Recreation, 95
Certificate, admission by, 104
Certificates, 146, 173, 201, 202, 262, 281, 333
Certification, communicative disorders, 333; cytotechnology program, 263; dental assisting, 281; medical laboratory assistant program, 263; medical technologist, 264; nursing, 269; pharmacist, 276; teacher, 112
Certified Medical Laboratory Assistant Program, 263
Change, in address, 122, 158; in college, 158; in enrollment, 115, 157; in grade, 156; in program of studies, 157; and fee, 117, 118; in residence status, 118; in section, 158
Chemical Engineering, Department of, 378; curriculum, 236; laboratory, 236
Chemistry, Department of, 327
Child Development Program, 95
Choreography, see Dance
Churches, see Religious life of the campus
Civil Defense Program, 290
Civil Engineering, Department of, 381; accreditation, 81, 232, 233; cooperative education program, 239; curriculum, 237; honors, 239; laboratories, 239; Research Facility, Eric H. Wang, 99; combined program, 239
Class hours, see Credit hours
Classical languages, see Modern and Classical languages
Classics, 452
Classification, of courses, 296; of students, 159
Clinical facilities, medicine, 261, 267; nursing, 271
Clinical science, courses in, 443
Closed Circuit Television, see Instructional Media Services
Collections, 86, 89
College, change in, 158
College Enrichment Program, 96
College Entrance Examination Board, Advanced placement program, 106
College Level Examination Program, 107
College Work-Study Program, 127
Colleges of the University, see Arts and Sciences, Business and Administrative Sciences, Education, Engineering, Fine Arts, Graduate School, Law, Medicine, Nursing, Pharmacy, University; see also Community
Combined Curricula, or programs, 183, 198, 239, 240, 241, 242, 276, 431, 496
Commencement, 166; see also Academic calendar
Communication Arts, composite in, 228
Communicative Disorders, Department of, 333
Community College, 289; non-degree status in, 110, 289; scholastic regulation, 159, 160
Community Development Program, 94
Community Economic Education and Development Program, 94
Comparative Literature, 257, 335; minor in A&S, 336
Composite teaching areas, in Elem Ed, 215; in Sec Ed, 228
Computational Facilities, 239
Computers, 233, 239
Computer science, Elec Engr and, 234, 241, 387; Math & Stat, 430
Computing Science and Information, Division of, 337
Concentrations, in B&AS, 192; in Music, 252; in Sec Ed, 227
Concerts, 88; attendance, 252
Concurrent enrollments, 109
Conferences, 289
Construction option, 239
Continuing Education, Division of, 288; accreditation, 81, 288
Contract, housing, 121
Cooperative Education Program in Engr, 233; courses in, 378
Correspondence courses, see Independent Study
Counseling, see Advisement
Counseling Center, 148
Course numbering system, 296
Course repetition, 159, 166
Courses of instruction, 296
Crafts, see Art
Credentials, 103, 104, 107, 108, 110, 111, 257, 259, 277

Credit grade option, 155
Credit hours, 11, 155, 296
Criminal Justice Program, 97
Cuban loans, 125
Curricula, see Colleges, and Courses of Instruction
Curriculum and Instruction, courses in, 345
Cytotechnology program, see Medical Laboratory Sciences Programs

"D" grades, 109, 155, 159, 180, 279
Dance, minor, 506
Data Bank, 94
Data Processing, course offered, 372
Deadline, for application, 9, 10, 103, 104, 108, 257, 259, 261, 283; for dental hygiene, 283; for housing application, 122; for loan and scholarship applications, 128
Dean of Students, 148
Dean's list, 159; nursing, 271
Deferment, Selective Service, 114
Degree requirements, 163; in A&S, 180; in B&AS, 194, 196; in Dental Hygiene, 286; in Educ; 209; in Engr, 235; in FA, 247; in Nurs, 272; in Pharm, 278; in Univ Coll, 175
Degrees, double, 163; offered, 173, 175, 176, 179, 192, 193, 196, 202, 209, 232, 247, 248, 250, 254, 257, 259, 261, 267, 269, 278, 281; statistics, 510; with distinction, 169; with honors, 166; see also Degree requirements
Dental Programs, 281
Dental Assisting, courses in, 338; curriculum, 282
Dental hygiene, 282; admission, 283; application deadline, 103, 283; Associate of Science degree curriculum, 285; BS degree curriculum, 286; courses in, 337; licensure, 283
Dentistry, see Predentistry
Departmental Honors programs, 168; in CE, 239; in Educ, 202; in Engl, 404; in FA, 247; in Math, 431; in Nurs, 270; in Psych, 490
Departments of instruction, 191, 232, 246, 296
Development Office, 84
Dietetics, 223
Dining halls, see Housing
Diploma fee, see Graduation fee
Dishonesty in academic matters, 107, 111, 162
Dismissal, disciplinary, 107, 111, 162; honorable, 162; see also Suspension
Disqualification, Graduate School, 161
Distinction, degree with, 169
Distributed minors, 182, 299, 300, 335, 408, 412, 417, 473, 485, 497
Dividends and penalties, 164
Division of Computing and Information Science, 337
Division of Continuing Education, 288
Division of Government Research, 96
Division of Inter-American Affairs, 189
Division of Public Administration, 292; courses in, 495
Doctor of Education, 202, 257
Doctor of Philosophy, 202, 216, 234, 257
Dogs or Pets, 122, 124
Dormitories, see Housing
Dramatic Art, see Theatre Arts

Early admission, 106
Early Childhood study, composite minor in, 215
Early decision, 104
Economics, Department of, 339; Economics-Philosophy, 343; see also Business and Administrative Sciences
Education, art, see Art Education
Education, Business, see Business Education
Education, College of, 201; accreditation, 81, 201; admission to, 204; certification, 201, 202; curricula, 211; degrees, 209; facilities, 208; graduation requirements, 209; programs in, 203; teacher education, 203
Education, library science, see Educational Media
Education, music, see Music Education
Education, placement, see Career Services Center
Education Specialist, Certificate of, 202, 216
Educational administration, courses in, 346
Educational deferment, military, 114
Educational foundations, courses in, 348
Educational media, see also Library Science
Educational opportunity grants, 129
Educational Planning and Development, Bureau of, 100
Electives, in A&S, 184; in B&AS, 194; in Latin American Studies, 424; in Pharm, 278
Electrical Engineering and Computer Science, Department of, 387; accreditation, 81, 232, 233; curriculum, 240; laboratories, 241; minor with mathematics, 431
Electronic Repair Service, see Instructional Media Services
Electronics, see Electrical Engineering
Elementary Education, Department of, 351; composite minors, 215, 216; curricula, 214
Emeriti, 20
Employment, student, 127, 150; College work-study, 127; The Career Services Center, 150
Engineering, College of, 231; accreditation, 81, 232, 233; admission to, 232; Bureau of Engineering Research, 100; combined curricula, 183, 233; cooperative education, 233; curricula, 235; departments of, 232; graduate study, 234; graduation requirements, 235; scholastic regulations, 234; with mathematics, 431
Engineering Mechanics, 234
Engineering Research, Bureau of, 100
Engineering science of materials, 231, 380
Engineers' Council for Professional Development, 81, 233
English, Department of, 400; Comparative Literature, 335; English-Philosophy, 406; tutorial program, 177
English-Philosophy, major in, 406

Enrollment, see Registration
Enrollment statistics, 510
Ensemble music, 466
Entrance, see Admission
Eric H. Wang CE Research Facility, 99
Estimate of expenses, 120
Ethnic Studies, 292
Ethnology, see Anthropology
Evaluation of transferred credentials, 108, 109, 110, 111, 277
Evening courses, 80, 289
Examination, admission by, 106
Examinations, 162; absence from, 162; admission by, 106; advanced placement, 106; American College Tests, 103, 104; Dental hygiene aptitude, 283; dishonesty in, 162; fees, 117, 163; Graduate nurse, 269; Law admission, 259; Medical College Admission, 262; modern and classical languages placement, 451, 452, 455, 457, 459; physical, in Educ, 205; physical fitness, 204; special, 162; TOEFL, 112; to establish or validate credit, 107, 163
Exhibitions, 86
Expenses, 116; estimate of, 120; in dental assisting, 282; in dental hygiene, 284; in medicine, 116
Extension and independent study courses, 288; acceptance in Engr, 234; addition of, 158; allowed toward degree, 165; in Graduate School, 258; in Pharmacy, 277; transferred credit in, 109
Extracurricular activities, see Student Services

Faculty directories, 23; see also Courses of Instruction
Federal Loan Program, 126
Fees, 116; for graduates, 116; for Law, 116, 260; for Medicine, 116; for undergraduates, 116; housing reservation, 122; payment of, 115, 116; personal liability, 122; refunds, 119, 123, 124
Fellowships, 257
Field sessions, 9, 301, 302
Film Library, see Instructional Media Services
Financial aid, 125
Fine Arts, College of, 246; admission to, 246; collections, 87, 91; courses in, 406; departmental honors, 247; departments of, 246; galleries, 87; graduation requirements, 247; Library, 91; Museum, 87; scholastic regulations, 247; Tamarind Institute, 256; teacher education, 250
Foreign language, see Modern and Classical Languages
Foreign students, see Students from other countries, and International Student Program
Foreign studies, 184
Forestry, see Preforestry
Fraternities, honorary, 154; social, 154
French, 452
Freshman orientation period, 114; see also Academic calendar
Freshman program, in A&S, 184; in B&AS, 193; in Dental Hygiene, 285, 286; in Educ, 212, 213, 214, 217, 218, 219, 220, 221, 222, 223, 224, 230; in Engr, 235; in FA, 248, 249, 250, 252, 253, 254, 255; in Med Tech, 188; in Nurs, 273; in Pharm, 280; in two-year secretarial program, 178
Freshmen, admission of, 104
Fuel processing, 233
Fulbright Program, 149

G.I. Bill, see Veterans
Galleries, art, 87
Gallup branch college, 83, 290; staff, 63
General Business curricula, in Educ, 213; minor, 214
General Educational Development Tests, 106
General Studies, 407; Honors in, 166
Geography, Department of, 407
Geology, Department of, 411; museum, 87
German, 455
Glossary of college terms, 11
Government of the University, 82
Government Research, Division of, 96
Grade points, 155, 157
Grade reports, 157
Grades, 155; change in, 156; "D" on transfer, 108, 180, 277, in honors, 155; in USP, 168
Graduate Assistants, 69
Graduate credit, for courses offered, 296; for extension or independent study, 258; for work taken as an undergraduate, 258
Graduate Nurse examination, 269
Graduate programs, 257; in Educ, 202; in Engr, 234; in FA, 247
Graduate School, 257; assistants list, 69; course numbering in, 296; disqualification, 161; office of research and fellowship services, 99; sixth-year programs in Educ, 202; thesis binding fee, 117
Graduate Student Association, 154; fee, 119
Graduation, 166; fee, 117; with distinction, 169; with Honors, 166; see also Degree requirements, and Degrees
Graphics Service, see Instructional Media Services
Greater U.N.M. Fund, 84
Greek, 456
Group requirements, A&S, 181; Educ, 210; FA, 248, 249, 252, 253, 254, 255, see also Courses of Instruction
Guidance, 113, 148, 172, 278
Guidance and Special Education, Department of, 353; Programs in, 216, 217

Harwood Foundation, 87, 290
Health education, courses in, 362; curriculum, 220; minor, 221
Health, Physical Education, and Recreation, Department of, 358; curricula, 217
Health Insurance, student, 150
Health service, see Student Health Service
High school, admission from, 104
High school teaching curriculum, see Secondary education

History, Department of, 416; American Studies, 299
History of the University, 82
Home Economics, Department of, 366; in A&S, 183, 223; in Educ, 222; Home Management fee, 117; laboratories, 209; minor, 222
Home Economics Education, courses in, 368; curriculum, 222
Home Improvement Project, 97
Home management fee, 117
Honorable dismissal, 162
Honorary organizations, 154
Honors, degree with, 166; see also Departmental Honors
Honors work, 166
Housing, 121; advance deposit, 122; apartments, 124; application, 104, 108, 122; board, 123; cancellation, 122, 123; contract, 104, 122, 123; facilities, 121; married student, 124; payments, 123; policy, 121; rates, 123; refunds, 124; regulations, 121; reservations, 122
Human Performance Laboratory, 209

Ibero-American Studies, 189, 422
Incomplete, grade of, 156, 157, 161; removal fee, 117, 156
Independent Study courses, 289; allowed toward degree, 165, 234, 258, 277
Index, scholarship, 157
Industrial Education, courses in, 374; curriculum, 224; laboratories, 208
Infirmary, see Student Health Service
Information, general, 80
In-Service Education, see Instructional Media Services
installments, housing payments, 123
Institute for Social Research and Development, 92; Bureau of Business Research, 93; Bureau of Revenue Training Program, 94; Center for Human Resources Development, 97; Center for Environmental Research and Development, 95; Center for Leisure and Recreation, 95; Child Development Program, 95; College Enrichment Program, 96; Criminal Justice Program, 97; Division of Government Research, 96; Home Improvement Project, 97; Special Services Program, 98; Technology Application Center, 98
Instructional Development, see Instructional Media Services
Instructional Media Services, 85
Instrumental Music concentration, 252
Insurance plan, 150; fee, 116
Inter-American Affairs, Division of, 189
Intercollegiate athletics, 152
International Programs and Services, Office of, 149
International student program, 149
Intramural program, 152
Italian, 456

Jobs, see Employment
Jonson Gallery, 87
Journalism, Department of, 423
Junior college, transfer from, 109

KNME-TV, 288

Laboratories, Educ, 205, 208, 209; Engr, 236, 239, 241, 243, 244; Language, 450; therapeutic PE, 209
Laboratory Technology, Associate of Science degree in, 176
Language laboratory, 450
Languages, see English, and Modern and Classical Languages
Late payment fee, 117
Late registration, 114; fee, 117
Latin, 457
Latin American Center, 189
Latin American Studies, 189, 190, 257, 424
Law, School of, 259; accreditation, 81, 259; admission test, 259; admission to, 259; courses offered, 425; credentials required, 259; Dean's list, 159; fees, 116, 260; graduation honors, 169; Library, 91
Learning Materials Center, 208
Lectures, 86
Libraries, Fine Arts, 91; Law, 91; Medical Sciences, 92; Parish, William J., Memorial, 91; Zimmerman, 89
Library Science Education, 350
Licensure, dental hygiene, 283; education, 201, 202; nursing, 269; pharmacy, 276
Linguistics and language pedagogy, 429; in A&S, 430; in Anth, 305; in El Ed, 215; in Sec Ed, 228, 229
Literature, see Comparative Literature, English, and Modern and Classical Languages
Loan funds, 125; federal low-interest insured, 126; in Dental Hygiene, 283; in Law, 260; National Defense Student, 126; New Mexico Student Loan Program, 126; Nursing Student, 126; United Student Aid, 126
Los Alamos Residence Center, 83, 291; staff, 64
Lower division, course numbering in, 296

Major and minor studies, 182, 227; distributed minor in A&S, 182; Period minor in Comp Lit, 336; residence requirements, 165; see also Courses of Instruction
Manzanita Center, 208
Maps, campus, 4, 5, 6, 7
Marine Corps, see Naval ROTC
Marking system, 155
Married student housing, 124
Master's degree, 255; in B&AS, 192, 196; in Educ, 202, 216; in Engr, 234; in FA, 247; in Latin American Studies, 184
Mathematics and Statistics, Department of, 430; combined program with Engr, 431.
Mathematics 010 and 020, 490; fee, 117, 119
Matriculation fee, 116
Maxwell Museum of Anthropology, 86
Meals, see Housing
Mechanical Engineering, Department of, 394;

accreditation, 81, 232, 233; combined ME-MBA program, 242; curriculum 243; minor with mathematics, 431
Mechanics, Engineering, 234
Medals, 146
Medical Biology, courses in, 444
Medical College Admissions Test, 262
Medical examinations, **see** Examinations
Medical Laboratory Assistant Program, 263
Medical Laboratory Sciences Programs, 262
Medical Laboratory Technician programs, 176, 264
Medical sciences, courses in, 444
Medical services, **see** Student Health Services
Medical Technology, 187, 264
Medicine, School of, 261; accreditation, 82; admission, 261; courses offered, 441; fees, 116; library, 92; Medical Laboratory Sciences Programs, 262; **see also** Premedicine
Meteoritics, Institute of, 88
Military, residence for tuition purposes, 118
Military credits, 113
Military deferment, 114
Military training, 101; **see also** Air Force ROTC, and Naval ROTC
Minor studies, **see** Major and minor studies
Modern and Classical Languages, Department of, 450; Comparative Literature major, 335; freshman placement, 451; laboratory, 450
Modern Languages, courses in, 451
Museums, 86, 87, 88
Music, Department of, 464; concentrations, 250; concerts, 252; curricula, 252; examinations, 252; fees, 116, 464; minor, 464; NASM membership, 81, 224, 250; record collection, 91
Music Education, courses in, 469; curriculum, 224, 253; examinations, 250; minor, 225, 469
Music literature, historical, 253
Music, private instruction, **see** Applied music

National Association of Schools of Music, 81, 224, 250
National Council for Accreditation of Teacher Education, 81, 201
National Defense Student loans, 126
National League for Nursing, 81, 269
National University Extension Association, 81, 288
Navajo, 451
Naval ROTC, 101, 294; in A&S, 191; in Educ, 211; in Engr, 233; in Pharm, 278; in Univ Coll, 173
Naval Science, Department of, 471; curriculum, 294
New Careers, 97
New Mexico Division of Vocational Rehabilitation, 127
New Mexico Student Loan Program, 126
New Mexico Union, 152
News-Editorial sequence, 423
Non-credit courses, 289
Non-degree status, 110, 289; credit limitation, 111; scholastic regulations, 159, 160, 161, 162
Nonresident tuition, 116, 117
North Central Association, 81, 113, 152
Nuclear engineering, 244; courses in, 398; laboratories, 244
Nursing, College of, 269; accreditation, 82, 269; admission to, 269; courses offered, 471; curriculum, 273; facilities, 271; federal loans, 126; graduation requirements, 272; honors program, 270; licensure, 269; regulations, 272
Nursing Student Loans, 126, 271

Off-campus residence centers, 290
Office training, **see** Business Education
Orchestra, **see** Music
Organ concentration, 252; **see also** Music
Organizations, student, 153
Orientation, 114; **see also** Academic Calendar

Painting, **see** Art
Paleoecology, courses offered, 473; minors in, 473
Parish, William J., Memorial Library, 91
Payments, **see** Fees, and Housing
Penalties and dividends, 164
Period minor, 336
Pets or dogs, 122, 124
Ph.D., **see** Doctor of Philosophy
Pharmacy, College of, 275; accreditation, 81, 275; admission to, 277; courses offered, 474; graduation requirements, 278; licensure, 276; scholastic regulations, 277
Philosophy, Department of, 477; Economics-Philosophy, 343; English-Philosophy, 406
Photograph collection, 91
Photography, **see** Art
Physical Education, courses in, 358; curricula, 217; minor, 218, 219; requirements, 164, 358; **see also** Athletics
Physical examinations, **see** Examinations, medical
Physical science, 480
Physicians, University, 149
Physics and Astronomy, Department of, 480
Piano concentration, 252; **see also** Music
Placement Center, **see** Career Services Center
Political Science, Department of, 485
Popejoy Hall, 88
Portuguese, 457
Practice teaching, **see** Student teaching
Predentistry, 186
Preforestry, 186
Prelaw, 186
Premedicine, 186, 261, 262
Prizes, 133, 143; freshman, 133; upper class, 143
Probation, 160
Professional organizations, 154
Program of studies, change in, 157; fee for change in, 117, 119

Psychology, Department of, 489
Public Administration, Division of, 292; courses in, 495
Public Laws, see Veterans
Public speaking, see Speech
Publications, student, 154

Radio, see Electrical Engineering, Speech Communication, Telecommunication, Television-Radio
Radiological Safety, Office of, 99
Rates, see Fees, and Housing
Readmission, 109
Recitals, music, 252
Record Collection, 91
Recreation, courses in, 364; curriculum, 221; minor, 222
Recreational facilities, 152
Refunds, 119, 124
Regents of the University, 13
Registration, 114; changes in, 157; concurrent enrollments, 109, 158; fees, 116; in nondegree status, 110; late, 114; procedure, 114
Regulations, general academic, 155; see also Attendance, Housing, Scholastic
Religious life of the campus, 153
Remedial reading, 148, 345
Remedial speech, see Communicative Disorders
Repetition of course, 159, 166
Research Allocations Committee, 99
Research activities, organized, 92; CE Research facility, Eric H. Wang, 99; Institute for Social Research and Development, 92; Office of Radiological Safety, 99; Office of Research and Fellowship Services, 99; other, 99
Research and Fellowship Services, Office of, 99
Research lectureship, 86
Reservations, housing, 122
Residence centers, off-campus, 290
Residence credit, definition, 165
Residence requirements, 164; in major and minor, 165; in Pharm, 278; at Los Alamos Residence Center, 291
Residence status, 117, 118
Resident tuition, 116
Residential halls, see Housing
Responsibility, student, 115, 155, 157, 161, 172, 180, 208, 210, 235, 270, 285
Retardation, Mental, minor, 216
Revenue Training Program, Bureau of, 94
Romance languages, see Modern and Classical Languages
Room and board, see Housing
Room regulations, see Housing
Room reservations, see Housing
ROTC, see Air Force, and Naval
Russian, 458
Russian Studies, 496

Scholarship Index, 157
Scholarships, 128; Educational Opportunity Grants, 129; freshman, 129, 131; in Dental Hygiene, 283; in Inter-American Affairs, 189; in Law, 260; in Pharm, 276; upperclass, 129, 133
Scholastic regulations, 159; for degree, 163; see also the various colleges
Scholastic status, 159, 160, 162
Science, composite in, 215, 228
Secondary Education, Department of, 225; composites, 228; courses in, 369; curriculum, 230
Secretarial Program, two-year, 178
Selective Service regulations, 114
Semester hours, see Credit hours
Senior residence requirements, see Residence requirements
Service credits, see Military credits
Service organizations, 154
Shop, see Industrial Education
Short courses, 289
Shorthand, see Business Education
Situation of the University, 84
Sixth-year graduate programs, 202, 216
Slide collection, 91
Social Studies, composite in, 216, 228
Social Groups, 154
Sociology, Department of, 497
Sororities, social, 154
Southwestern Biology, Museum of, 87
Spanish, 459
Special Education, courses in, 355; major in, 216
Special Services Program, 98
Speech Communication, Department of, 502; emphasis in communication disorders, see Communicative Disorders; emphasis in Telecommunication, 502
Statistics, degree, 510; enrollment, 510; see also Mathematics and Statistics
Structural engineering, 233
Student Activities, 152
Student activities fee, see Associated Students Fee
Student Aids Office, 125, 126, 128
Student Bar Association, 260
Student employment, see Financial aid
Student Health Service, 149, 271; insurance plan, 144
Student Organizations, 153
Student Payment Record, 117
Student Publications, 154
Student services, 148
Student teaching, 203, 205, 207, 214, 226, 286, 352, 370
Student welfare, see Student services
Students, Dean of, 148
Students from other countries, 112, 149
Subject matter preparation, 105
Summer session, 288; see also Academic calendar
Support of the University, 82
Suspension, 110, 160, 161; see also Disqualification, Graduate School

Tamarind Institute, 256
Teacher education, admission to, 203
Teachers, certification of, 201; placement, 150
Teaching, **see** Education, College of
Teaching assistants, list, 66
Teaching English to speakers of other languages, 229
Teaching majors and minors, 227
Teaching of reading in secondary school, 229
Technical institutes, credit from, 109
Technology Application Center, 98
Telecommunication, emphasis in, 502
Television programming, 288
Television-Radio emphasis/sequence, 423
Testing Division, 177
Tests, **see** Examinations
Theatre Arts, Department of, 505; curricula, 254; major and minor in, 506
Theoretical and applied mechanics, 233
Theory and composition concentration, music, 253
Therapeutic Physical Education Laboratory, 209
Therapeutic Physical Education Playground, 209
Thesis binding fee, 117
Three-two program in B&AS, 196; breadth requirements, 198
Traineeships, 257
Transcripts, 162; **see also** Credentials
Transfer, from University College, 172, 173; to A&S, 179; to B&AS, 193; to BUS, 174; to Educ, 204; to Engr, 232; to FA, 246; to Nurs, 269; to Pharm, 277
Transferring Students, 107; A&S, 180; B&AS, 194; Dental Hyg, 284; Educ, 204; Engr, 232; FA, 246; Grad, 257; Law, 259; Nurs, 270; Pharm, 277; Univ Coll, 108
Tuition, 116
Two-year secretarial program, 178
Typewriting, **see** Business Education

Unaccredited institutions, admission from, 109
Unclassified students, 109
Undergraduate Seminar Program, 168; seminars, 407
Uniforms, AFROTC, 101; dental assisting, 282; dental hygiene, 284; NROTC, 102; Nurs, 272
Union, **see** New Mexico Union
United Student Aid Fund loans, 126
University Art Museum, 87
University College, 171; admission to, 106, 108, 110, 172; Associate of Arts in Human Services, 175; Associate of Science in Laboratory Technology, 176; Bachelor of University Studies, 173; certificate, 173; continuation in, 172; Counseling Center, 148; release from, 173; scholastic regulations, 159; two-year secretarial program, 178
University Studies, Bachelor of, 173; admission to, 174; degree requirements, 175
Upper division, course numbering in, 296
U.S.A.F.I. courses, acceptance of, 113

Validation, college credit, 109; fee, 117; high school credits, 106
Veterans, admission of, 113; guidance, 148; service credits, 113; training approval, 82
Veterans Affairs, Division of, **see** Counseling Center
Vocal concentration, 252
Vocational guidance, 148, 171
Vocational rehabilitation, 127
Voice, **see** Music

Western Interstate Commission for Higher Education, 262
Wind instruments, **see** Music
Withdrawal, from a course, 157; from the University, 158; military, 158; refunds, 119
Work, **see** Employment
Work Incentives, 97
Workshop, dance, 506; education, 210
Work-Study Program, **see** College Work-Study Program
Writing, **see** English

Zimmerman Library, 89
Zoology, **see** Biology

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